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ABSTRACT

Four issues of this newsletter focus primarily on the use of communication technologies in developing nations to educate their people. The issues included in this collection are: (1) No. 56 (1987-1), which highlights agricultural, health, and educational projects that have used radio, telecommunications, and interactive video to train trainers and/or reach their target audiences; (2) No. 57 (1987-2), which features reports on pilot projects of the U.S. Agency for International Development-supported Rural Satellite Program in Indonesia, Peru, and the Caribbean, and communication strategies and lessons learned from HIV (Human Immunodeficiency Virus) and AIDS (Acquired Immunodeficiency Syndrome) education efforts in the United States and the developing world; (3) No. 58 (1987-3), which describes the use of radio and videotape recordings to disseminate agricultural and public health information in the rural areas of developing countries; and (4) No. 59 (1987-4), which focuses on the use of comics and video for disseminating health information and ongoing interactive radio instruction activities in Honduras, the Dominican Republic, Bolivia, Lesotho, and Papua New Guinea. Reviews of recent publications and announcements of development-related conferences and courses are included in individual issues. (BBM)

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DEVELOPMENT COMMUNICATION REPORT

No. 56-59

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Development Communication Report

1987 / 1
No.56

Teachers Interact with Radio in Nepal

by Philip A.S. Sedlak

In a country like Nepal, logistics problems are formidable. Much of the country is very mountainous and roads provide access to only part of the country. Reaching distant populations is far more expensive than in many other developing countries. A project currently underway is attempting to determine the efficiency of interactive, radio-based teacher training as a viable substitute for face-to-face interaction. A number of projects sponsored by the U.S. Agency for International Development (AID) have already shown that radio can be an effective, cost-efficient medium for the provision of quality instruction in the classroom. (See *DCR* Nos. 49, 51, and 52.)

The Radio Education Teacher Training Project (RETT), now in its second phase in Nepal, has many features in common with other interactive radio education projects. We are applying curriculum development principles of systematic planning, distributed learning, and cyclical instruction as well as the principles that effectively exploit the radio medium, such as intensive broadcasting, interactive learning, immediate reinforcement, an engaging instructional pace, and maximal time devoted to the given task. At the same time, RETT contrasts in many ways with projects such as Radio Mathematics in Nicaragua and Thailand, Radio Language Arts in Kenya, and RADECO in the Dominican Republic. (See above-referenced *DCR* issues.) Because of differences between these radio projects, the RETT lessons have taken on a new form, but the instructional and broadcast design principles have remained basically the same.

The major focus here will be to compare audience characteristics. I hope this comparison will be of use both to educators interested in radio for classroom teaching and to those who may want to exploit the medium for other kinds of distance teaching, especially teacher training.

Background: RETT I

In 1972, the Nepalese government, in conjunction with AID Nepal, began to develop a plan for using radio in education. The feasibility study done at that time suggested that the best use of educational radio in Nepal would be to train and upgrade underqualified primary school teachers who had not yet passed the school-leaving certificate examination (SLC) administered to most candidates at the end of the tenth and final year of the Nepali school system. At present, twenty-seven percent of the primary teachers have not passed the SLC. Approximately fifteen percent are both untrained and under-certified. Armed with the mandate to improve teachers' skills and qualifications, the first RETT phase began in 1978 under the guidance of the Ministry of Education and Culture.

In this first phase, Radio Nepal received a 100,000-watt shortwave transmitter and antenna, as well as other equipment. In-country or overseas training was provided for the newly-recruited Nepali staff. We then developed a curriculum covering teaching methodology for six primary school subjects: Nepali, mathematics, social studies, health, physical education, and art. Rural development and education were added to this basic six-subject curriculum. Two hundred hours of program material were produced and broadcast, accompanied by self-instructional materials for each lesson. Radios were loaned to participating teachers and the self-instructional materials were distributed.

Broadcasts began in August 1980, with an enrollment of 5,593 teachers from 72 of the 75 districts. Of this number, 2,944 have received certification as trained teachers. Teachers who participate in the ten-month course and successfully pass the RETT examination are recognized as trained teachers and receive monthly "training allowances" over and above their regular salaries.

The RETT project has become institutionalized within the Ministry of Education and Culture as the Radio Education Division, with its own offices and studios in a suburb of Nepal's capital city, Kathmandu.

(Continued on page 2)

On the 25th anniversary of the U.S. Agency for International Development (AID), David Sprague, Director of the Office of Education in the Bureau for Science and Technology, reflects on AID's past communication-related activities and looks toward a future that will involve us all in applying the lessons learned.

Approximately fifteen years ago the Office of Education in the Bureau for Science and Technology (then Technical Assistance Bureau) determined that communications technology could play a vital role in delivering information and providing instruction in developing countries. Beginning with pilot demonstrations in primary school mathematics and nutrition education, the program has developed into full-scale operations in almost every sector.

Emphasis upon the systematic use of media began with a thorough analysis of the social and economic conditions that developing countries would face for the foreseeable future. It was readily apparent that well-trained, fully-qualified teachers, trainers, extension agents, and administrators would not be available in sufficient numbers, especially in rural areas, to implement development programs. As a result, many people would never receive the education, training or information they need to improve the physical conditions of their lives. In addition, many of the development programs would be of such uneven quality that even if the information or training reached the intended audience, it could be ineffective and consequently wasteful of scarce human and fiscal resources.

Countries as culturally diverse as Honduras, Kenya, and Nepal have successfully demonstrated with AID support that communications technology can overcome the barriers of distance and isolation and make up for the scarcity of trained personnel. Children have been successfully taught reading and mathematics, mothers have learned how to administer oral rehydration therapy to sick infants, universities have extended the reach of talented professors to distant campuses where students would otherwise rarely have the opportunity to hear them, farmers have learned how and when to use fertilizer – all by the systematic and judicious use of communications technology.

It is our task now to inform governments, donors, all who are concerned with development, that a tremendous tool exists which demonstrates its effectiveness and affordability if properly designed and implemented. That is the task that lies ahead. ■

Supported by the Bureau for Science and Technology of the U.S. Agency for International Development

Development Communication Report

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**Clearinghouse on
Development Communication**

**1255 23rd Street, N.W.
Washington, D.C. 20037 USA
Tel.(202)862-1900
Cable: ACADED
Telex: 197601 ACADED WASH**

**Judy Brace, Director
Kathleen Moran, Editor
Robert Vittel, Information Specialist
William Arnt, Program Assistant
ISBN0192-1312**

AED
International Division

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(**Sedlak** *continued from page 1*)

An evaluation toward the end of the first phase of the project showed that the target group of untrained, rural primary teachers had been successfully reached. Because the first phase concentrated primarily on methodology, the evaluators recommended a second phase be implemented to focus on improving the teachers' understanding of core subject areas.

Background: RETT II

The second phase, RETT II, has two purposes: to upgrade teacher proficiency in major content areas, and to continue to prepare teachers for the SLC examination. Under RETT II, radio lessons are produced to coordinate the content from years 7, 8, 9, and 10 of the Nepalese school system in English, mathematics, science, and Nepali. Listeners are currently receiving three lessons per week over a 39-week period.

For 1986, the RETT II pilot year, we prepared radio lessons in one subject area only – English. Two hundred teachers from five districts of the country are participating. The number of participants and subject areas offered will both gradually be expanded. Current plans are to include lessons in mathematics in 1987 and science and Nepali at a later date.

Project design and planning were carried out jointly by AID and the Ministry of Education and Culture's Radio Education Division. The interaction element was first included during this phase. If the interactive method is successful in reaching the current target audience, there is a strong likelihood that the radio series can also be used by high school students who are preparing for the SLC examination. With the consolidation of institutional structures at the Radio Education Division and further training of scriptwriting, production, and administrative personnel in radio education, sufficient potential will exist for the logical move to in-class interactive radio instruction.

Audience Characteristics Comparisons

As noted, the RETT project is similar in many ways to other interactive radio projects. There are, however, major differences, dealing primarily with audience characteristics, which have played a major role in shaping the teacher training project. I will briefly discuss these differences along with other related issues.

The formative evaluation process provides the type of information about these differences that is particularly helpful in making design and production changes of radio lessons. This in-process evaluation requires scriptwriting, production, and research and evaluation personnel to observe the target audience of teacher-listeners regularly while they receive their lessons over the radio. Careful notes are taken of the listeners' responses and reactions and no assumptions are made about the appropriateness of the lessons. All features of the programs undergo the same rigorous assessment through intensive formative evaluation in order to determine what does and what does not work.

RETT Phase II Projects	Other Interactive Radio Projects
Audience Characteristics	
1 Adults	Children
2 Teachers	Students
3 Individuals	Group
4 Unmonitored	Monitored
5 Home setting	School setting
6 Voluntary	Captive
Level of Instruction	
7 Secondary	Lower Primary
Time of Broadcast	
8 Evenings	School Day
Incentives	
9 Internal	External

1. Adults comprise the audience for the RETT projects whereas children are the target audience for other interactive radio projects. The implications for the design of the radio programs are many. Because adult attention spans are longer, teaching segments within individual broadcasts may be longer as well. Radio characters and content must be presented in a style appropriate to an adult audience. The quantity and quality of songs and games must be carefully measured.

   Listener interaction is important from the start. If listeners do not participate, it is very likely they will fall behind and eventually drop out. A major question at the beginning of the series was how well adults would interact with the radio. Would they be as willing to risk providing responses to a radio as children have done? In fact they do, but they need encouragement, both over the radio and through orientation sessions.
2. While RETT learners are primary school teachers, in other interactive radio projects the learners have been pupils. This difference has influenced both the dramatic and the pedagogical content of the lessons. The appropriateness of these content features is ascertained through the formative evaluation process. Observation of teacher-participants in RETT II revealed that drills are an important feature of the programs. They assist listeners in reinforcing structures that they have been learning and also give listeners increased self-confidence. The drills are often simpler for the listeners than other program material and become second-nature after a little practice.
3. In RETT II, learners participate as isolated individuals, whereas in other interactive radio projects learners participate in a group. This distinction was critical in the design of the learning package. With RETT II's emphasis on individual learning, there was not a strong need for training in the use of participation cues as is usually the case in most programs for group learning. Instead, we spent considerably more time in designing off-radio orientation sessions and on-radio repetition of participation instructions in order to train isolated listeners to respond appropriately.

   The single-listener audience for RETT

(*Continued on page 3*)

(**Sedlak** *continued from page 2*)

II has presented a serious problem for the formative evaluation team. Because of transportation problems in Nepal, it has been difficult to assemble a group of individual learners who could be observed at regular intervals throughout the course broadcasts. The individuals to whom we have easiest access, those from the Kathmandu Valley, are observed listening to every lesson, although during the current phase we are also receiving limited information from observers of distant listeners which is more valuable because they are less frequently observed. In classroom situations, students are likely to improve their behavior under observation conditions, but improvement is even greater with the intense one-on-one intervention which we have been required to use thus far. Participants who are intensively observed are rapidly outpacing listeners who are never monitored. During the next phase of the project we hope to recruit a larger pool of individuals for observation who will be monitored less frequently, thus be more representative of the group as a whole.

Photo by Frank Martin.

A Nepali teacher sits in a quiet corner in his home, upgrading his skills with help from interactive radio programming.

"... the advantage interactive radio offers ... is its compelling participatory element ..."

4. Other projects have used a teacher or a facilitator to oversee the activities of the learners. In the RETT projects, the learners themselves are responsible for their activities, meaning instructions to the listeners must be conveyed clearly, either during the orientation sessions or during the broadcasts. There are no teachers nearby to be sure that instructions are correctly understood and that listeners are performing them.
5. RETT II listeners receive the programs in their homes whereas pupils in other interactive radio projects receive radio programs in the schoolroom, or, in the case of the RADECO project, in a school-like setting. Distractions, such as the on-going activities of family members or the presence of visitors are by their nature, more difficult to control in a home than in a schoolroom environment. Home-bound listeners also miss broadcasts more often than do those in a classroom setting since "attendance" is self-enforced. By using on-the-air "social marketing" announcements and face-to-face orientation sessions, we have encouraged listeners to minimize distractions and to find an isolated listening spot if at all possible. We have also stressed that if learners fail to tune in to broadcasts they are likely to fall behind and may eventually drop out.
6. Related to the nature of the listening environment is the captive status of other interactive radio project audiences. The RETT participants are voluntary listeners, which means we must market our programs more forcefully than would be necessary in a classroom setting where a teacher would be present to ensure listener participation.
7. In other interactive radio projects, instruction is focused at the primary level – making it relatively easy to establish a consistent starting point for the curriculum sequence. Since RETT II focuses on the secondary level, we have had to pretest participants to establish a curriculum baseline starting point. We have been able to determine the average level of achievement in various skills through this pretesting, but it does not tell us how to determine the pacing of the programs. Obviously, the starting point in the curriculum is not the average achievement level. Instead, it must fall somewhere below that level. Therefore, pretesting of early lesson segments and rigorous formative evaluation are essential to ensure that the level both of broadcasting and of average listener's progress are harmonious.
8. Other interactive radio projects broadcast their lessons during the school day, whereas RETT projects broadcast in the evening, creating conflicting demands on RETT listeners' time. One way of responding to this conflict is to repeat the course offerings more often than is done in other interactive radio projects.
9. In other interactive radio projects many of the incentives are provided by the school system: the opportunity to acquire a higher level of proficiency in the target subject and thereby be promoted or the chance to demonstrate appropriate abilities before the teacher and before one's peers. In the RETT II project, while incentives may be provided by outside agencies by offering discounted radios, increased job security, certification, or more pay increments, the decision of how faithfully to participate remains primarily with the individual.

Discussion

Engaging the attention of the learner is an essential aspect of any effective learning system. The pedagogical effectiveness of interactive radio has been empirically verified in Nicaragua, Kenya, the Dominican Republic, and Thailand. Although passive-listening radio models have been shown to be effective, their effectiveness in comparison with the interactive radio model has not been demonstrated. I believe the advantage interactive radio offers over passive-listening radio models is its compelling participatory element, requiring repeated exchanges throughout the program. It is this high level of participation that guarantees the engagement of the learner. Increased participation is also a major proven factor leading to achievement differences between interactive radio learners and traditional classroom learners.

The challenges outlined here are those shared by any radio-based instructional system. Two unique qualities of the interactive radio model – repetition and rapid feedback – help to meet those challenges by affording better educational access and higher quality education not only to school children, but to their teachers as well. ■

Philip Sedlak is the radio education specialist on the RETT II Project, and was formerly the linguistics specialist for the Radio Language Arts Project in Kenya.

Briefly Noted

by Robert Vittel and William Amt

- Readers involved in the implementation of rural community development projects will be interested in a new publication from World Neighbors. Written by Jim Rugh, *Self Evaluation: Ideas for Participatory Evaluation of Rural Community Development Projects* provides helpful ideas about why project evaluations are important, who benefits from them, by whom and when they should be conducted, what aspects of the project should be evaluated, how to undertake an evaluation, and the importance of communicating and acting upon evaluation findings. This booklet also includes two evaluation case studies and sample forms as guidelines for an evaluation team. It is appropriate for both program administrators and local program personnel working in the fields of health, nutrition, agriculture, and community development. Available in English only for US$5 (if at least 25 copies are ordered, cost is US$4 each) from World Neighbors Development Communications, 5116 North Portland Ave., Oklahoma City, Oklahoma 73112, USA.

- The Centre for Development of Instructional Technology (CDIT) in India has published a partial listing of its database of audiovisual materials produced by various Indian and international organizations and agencies. *A Resource Guide to Audiovisual Communication Materials on Development Issues* has 141 entries whose titles cover a wide range of development topics, from "Stall Feeding of Goats" (illustrates how stall feeding is preferable to grazing, which can be environmentally damaging), to "Immunize and Protect Your Child" (explains to mothers the importance of immunizing their children against various diseases), to "The Role of Folk Media in Extension Education" (shows how local traditional media can be effective in teaching new ideas to villagers), to "Yes, I am a Working Woman" (tells of the situation of urban working women in India). The films are designed for training extension workers and educating villagers and urban dwellers. The guide's entries include the name of the film, the formats and languages in which it is available, by whom and in what year it was produced, an abstract of the film, and the distributing organization name and address plus conditions of film availability. Copies of the guide are available for 10 rupees (US$1.00) from the Centre for Development of Instructional Technology, D-1 Soami Nagar, New Delhi 110017, India.

- FAO Forestry Paper No. 66 *Forestry Extension Organization* is an in-depth handbook for those concerned with the organization of community-based forestry projects. It addresses the need for interrelated roles of extension agents and community members in order to successfully carry out a forest management project. The handbook, which is comprehensive enough to be used by people in various climatic and cultural settings, outlines appropriate methods of extension; how to design and implement the project around the needs and resources of a community's socio-economic structure, how formative evaluation with the participation of the community can improve the project, and the characteristics of an effective organization structure. Supplementary reports include FAO:ACFE/86/11 *Forestry Extension Curricula* and the forthcoming *Forestry Extension Methods*. All are available from the Food and Agriculture Organization of the United Nations, Via della Terme di Caracalla, 00100 Rome, Italy.

- The African Council on Communication Education (ACCE) has recently published the first issue of its new scholarly journal. This first issue of *African Media Review* examines the strategies and challenges of communications for rural development in Africa. It includes an excellent selection of articles written by well known African scholars in the areas of communication technology, communication research, comparative journalism, social-marketing communication, and communication policy making. *The Review* is intended to serve as a forum for African communication specialists, challenging them to "develop, promote, and direct appropriate tools to solve Africa's problems, especially in rural areas where communication is a decisive factor." Subscriptions to *African Media Review* are available at US$30 per year for three issues from the ACCE Institute for Communication Development and Research, P.O. Box 47495, Nairobi, Kenya.

- The International Network of Non-Governmental Organizations (INTERDOC) and the *Instituto Latinoamericano de Estudios Transnacionales (ILET)* have recently begun publishing a bimonthly bulletin in Spanish called *CONTACT-O*. This bulletin covers the how-to of regional and international computer networking: joining a network, hardware needed, data base systems, electronic mail, data transmission, etc. It also updates current activities in information and communications technologies applications in non-governmental organizations worldwide with particular emphasis on developing countries. *CONTACT-O* contains a very comprehensive selection of articles on informatics and networking between countries; recent articles have covered topics such as telecommunications costs in Latin America, communication and development, computers in research, and information on numerous microcomputer and information networks around the world. A recent issue (2/86) was also published in English. *CONTACT-O* is available in Spanish by writing to the Instituto Latinoamericano de Estudios Transnacionales (ILET), Casilla 16637, Correo 9, Santiago, Chile.

- Attention francophone readers: *Actualité des Techniques de Communication dans le Monde (ATC)*, a quarterly journal published by *TéléDiffusion de France*, is a good source of the very latest information on communication technology activities around the world. A recent issue (July 1986) is loaded with many news-clip style announcements on current events and happenings in satellites, cable-TV, audiovisuals, videotext, radio, broadcast TV, informatics, and new product developments. Emphasis is placed on reporting activities on the national and international level, including extensive developing-country coverage. There are particularly relevant and interesting sections on the introduction and application of these technologies in and among developing countries. The final pages are devoted to a calendar of current national, regional, and international communications conferences and expositions. *Actualité des Techniques de Communication dans le Monde* is available in French from: Service Etudes et Documentation, Direction des Affaires Spatiales et Internationales, TéléDiffusion de France, 21-27, rue Barbès, 92542 Montrouge Cedex, France. ■

Robert Vittel and William Amt work in the Clearinghouse.

New *Project Profiles*

A second volume of *Project Profiles* is now available from the Clearinghouse on Development Communication. These 49 brief case studies show how communication media are used to support development projects in the fields of agriculture, health, nutrition, population, education, and integrated development. This volume complements the 72 projects summarized in the first volume of *Profiles*.

The two volumes are available at no cost to those from developing countries, and to others for US$10.00 for Volume 1 and US$7.50 for Volume 2 from the: Clearinghouse on Development Communication, 1255 23rd St., N.W., Washington, D.C. 20037, USA.

Communication Training Opportunities

The 1987 Development Training and Communication Planning (DTCP) short training courses being offered by the United Nations Development Program (UNDP) this year include: "Production Techniques for Instructional Audiovisual Aids," "Communication Campaign Planning," "Production Techniques for Extension Audiovisual Aids," "Training Methods," and two new field- and middle-level management courses.

Nominations are now being invited for candidates whom agencies and projects may wish to sponsor for participation in these courses. Three-week courses cost US$1,935.00 and four-week courses run US$2,125 per person. Fluency in English is required. Nomination forms can be obtained from UNDP country offices or by writing to: UNDP/DTCP, P.O. Box 2-147, 19 Phra Atit Road, Bangkok 10200, Thailand. Cable: UNDEVCOM (BANGKOK).

Liberia's New Health Vehicle: Radio

by Florida A. Kweekeh

Liberia, a West African country with a largely rural population, has joined other Third World countries in promoting child survival programs. Using their new rural-based, 10,000-watt, medium-wave radio system, the Rural Communications Network (LRCN), cooperated with government Ministries, international health organizations, and donor agencies to implement two high-priority child survival programs – one in Oral Rehydration Therapy (ORT), the other in immunization.

Attacking Dehydration

Faced with the alarming fact that nearly every child in the country will experience four to five episodes of diarrhea during its first five years of life, the Ministry of Health and Social Welfare and donor agencies asked LRCN to assist them in publicizing a newly established oral rehydration center in New Kru Town, a suburb of Monrovia, the capital city. Mothers would be encouraged to bring in their children suffering from diarrhea and learn how to prepare the ORT solution at home.

"Network Liberia," a daily 30-minute educational program on LRCN was selected to carry ORT campaign messages. The campaign consisted of four components. First, a short English-language announcement (a spot), featuring a conversation between two mothers, was broadcast daily beginning in July 1986. In the spot, a mother whose child is very ill is given the location of the ORT center and told how to take advantage of its services by another mother whose children have been successfully treated there.

Second, other messages were prepared in the local language, Kru, that similarly informed mothers about the ORT center and how to prepare the solution at home.

Third, informational segments on oral rehydration were incorporated into "Network Liberia" on a regular basis throughout the four-month campaign period. These segments included interviews with medical specialists, Ministry of Health officials, and mothers.

Finally, a poster coloring contest was organized in September 1986 to encourage potential clients to visit the new ORT center. Cash prizes were awarded to winners in two age groups – those over 12 years of age and those under 12. Contestants were required to pick up posters at the ORT center to qualify for the contest, thereby familiarizing area residents with the location of the center.

Over the four-week period of the contest, 368 posters were distributed. A total of 86 colored posters were returned for judging, which was done by Ministry of Health, the U.S. Agency for International Development, and LRCN employees. Males and females participated in equal numbers with nearly one-third of the entries coming from children. Chalk, water colors, oil paints, colored pencils, crayon, and food coloring were among the media used to color the posters.

SAVE THE LIFE OF YOUR CHILD FROM
NEW KRU TOWN ORT UNIT

A health worker judges some color-the-poster contest entries.

Campaign Results

Statistical evidence of the educational impact of LRCN's promotional campaign of the ORT center was gathered by Dr. Dean Wilcox, a consultant from the Centers for Disease Control (CDC) in the United States. His assessment showed the number of visitors to the clinic had tripled during the four-month campaign. Between July and mid-October 1986, diarrhea-related cases brought to the clinic increased from 31 to 90. Center workers said mothers frequently attributed awareness of the center to the radio messages.

Further evidence attesting to the success of the ORT awareness campaign was the decreased number of cases of moderate dehydration, dropping from 70 to 17 percent per month during that time period. Another positive sign was the rise in the number of mild cases – which increased from 30 to 83 percent per month.

While both trends coincide with LRCN's radio campaign, it is recognized that the rise in total cases and mild cases of diarrhea, versus the drop in moderate cases over the same period of time may also be attributed, in part, to mothers using the center's services at the onset of their children's diarrhea. Another factor may be the number of mothers who were taught the ORT procedure who brought their children into the center with less severe symptoms. In both cases the mothers did not necessarily learn about the center from the radio.

Communication planners may question the use of radio for such small-scale interventions and for the purpose of promoting the use of a particular clinic. Nevertheless, it is LRCN's policy to focus on specific development activities designed for particular audiences, and to be satisfied with showing smaller increments of success.

That is not to say larger, national-scale campaigns have not been successfully implemented over Liberia's Rural Communication Network. The experience gained from the ORT promotional campaign was put to good use when the Combatting Communicable Childhood Diseases Program (CCCD) assisted in planning a national campaign to encourage the immunization of children under five and women of child-bearing age. The entire LRCN network cooperated with the Ministry of Health and Social Welfare, the CCCD Expanded Program on Immunization, and Unesco, to disseminate the ORT message throughout the country during the months of November and December 1986.

A series of eight spot announcements were prepared in English and nine local languages for broadcast ten times daily on the three LRCN stations on a rotating basis. Another element of the campaign, a 15-minute drama, was recorded by a popular dramatic group, Our People – One People, known for its insightful and amusing fables of contemporary life in Liberia. Recorded in English and five vernacular languages, the drama was broadcast twice weekly on all LRCN stations, with other Monrovia radio stations running the LRCN spots for broader coverage.

(*Continued on Page 7*)

On File at ERIC

by Barbara Minor

Documents recently entered in the ERIC (Educational Resources Information Center) files are concerned with the use of computers in education in developing countries, mass media and educational development, agricultural development and social change, and the patron-client network in African media. All six of these documents are available in microfiche, and four are also available in paper copy, from the ERIC Document Reproduction Service (EDRS), 3900 Wheeler Ave., Alexandria, Virginia, U.S.A. Be sure to include the ED number and payment in U.S. funds for the price listed plus shipping. Shipping costs can be calculated on the basis of three microfiche per ounce and 75 microfiche or pages of copy per pound.

- Lai, Kwok-Wing. *The Applications of Computers in Education in Developing Countries – with Specific Reference to the Cost-Effectiveness of Computer Assisted Instruction.* 1983, 140pp. (ED 268 978)

Designed to examine the application and cost-effectiveness of computer-assisted instruction (CAI) for secondary education in developing countries, this master's thesis from Queen's University in Canada begins by defining the research problem, describing the research methodology, and providing definitions of the key terms used throughout the thesis in the first chapter. The seven remaining chapters provide: (1) a discussion of the nature of CAI with emphasis on its instructional capabilities and cost-effectiveness; (2) a review of the literature on the effectiveness and costs of a CAI system in developed countries; (3) a general description of some educational problems in the Third World with specific reference to educational poverty; (4) a discussion of the applications of computers in developing countries; (5) cost estimates for a CAI system as used in a Mexican secondary school; (6) a discussion of the appropriateness of CAI in developing countries; and (7) a summary of the research project together with nine conclusions and five recommendations. Selected references, a sample questionnaire and cover letter, a list of computer manufacturers, and a categorization of selected developing countries by level of computer activity are attached. Available from EDRS is microfiche for $.75 or in paper copy for $10.80.

- *Computers in Education. Final Report of the Asian Seminar on Educational Technology* (Third, Tokyo, Japan, September 26-October 2, 1984). 1984, 102pp. (ED 272 149)

The third in a series, this seminar was organized to study the various uses of computer science in education and to analyze the main trends in that field, as well as to discuss problems encountered in the implementation of computer education by the national education systems of the ten participating countries: Australia, China, India, Japan, the Republic of Korea, Malaysia, the Philippines, Singapore, Sri Lanka, and Thailand. The report from that seminar provides: (1) descriptions of the purpose and organization of the Asian Programme of Educational Innovation for Development (APEID) and its participation in advanced technology activities; (2) information from a survey of current computer education and future trends in countries participating in the seminar; (3) discussions of such issues as trends in computer use, training for business and industry, teacher training and retraining, curriculum materials for teacher training, quality and availability of software, determining priorities in purchasing microcomputers, equality of access, ergonomic considerations, copyright policy development, and identification of learners; (4) guidelines for curriculum evaluation and development in computer education; and (5) 13 recommendations for curriculum organization, teacher training, regional cooperation, and Unesco/APEID responsibilities. Attachments include a copy of the opening address, the seminar schedule and agenda, lists of participants and members of the organizing committee, and a curriculum guide for microcomputer training for educators from the Japanese Ministry of Education, Science and Culture. Available from EDRS in microfiche for $.75 or in paper copy for $9.00.

- Romero, Patricia and Sanchez, James Joseph, compilers. *Mass Media Systems (Television, Radio and Satellite) for LDC Regional Educational Development. The Case of Latin America.* Bibliography 23. 1985, 16pp. (Ed 271 260)

Designed to serve as an introduction to the use of educational media in the less developed countries (LDCs), this bibliography provides an overview of materials available in government documents collections. The 49 documents listed are derived primarily from the U.S. Agency for International Development (AID), with two documents having been included from ERIC. Entries indicate the source from which the document can be obtained, and most entries include annotations. Dates of publication for the references range from 1967 to 1981, with most falling in the early to mid 1970s. Abbreviations used in document titles and annotations are defined, and an index provides an alphabetical listing of topics and areas of concern. Available from EDRS in microfiche only for $.75.

- Abbott, Eric A. and de Leon, Cesar Amado Martinez. *Interrelationships between Mass Media Use and Interpersonal Source Use in Agricultural Development. The Case of the Dominican Republic.* 1986, 25pp. (Ed 270 800)

This study examines: (1) how the use of interpersonal information sources, print media, and radio sources are interrelated for agricultural decisions; and (2) which patterns of media use or interpersonal source use are most closely associated with knowledge of recommendations made by agricultural extension services and with adoption of these recommendations. Twenty farmers from small- to medium-sized farms from each of 12 randomly selected areas in the Dominican Republic were selected for interviews. Data were collected on the farmers' use of mass media, interpersonal contacts with extension agents, activities in local organizations, main crops of the farms, and demographic information on the farmers interviewed. Results of data analysis suggest that for these farmers, the use of print, radio, and interpersonal sources of information are closely interrelated, with a particularly close relationship between print and interpersonal source use. It was also concluded that the elements of the information system work together and that adoption behavior is closely linked to interpersonal source use. Available from EDRS in microfiche for $.75 or in paper copy for $1.80.

- Kunczik, Michael. *Communications and Social Change. A Summary of Theories, Policies and Experiences for Media Practitioners in the Third World. Communication Manual.* 1984, 294pp. (ED 267 469)

Intended for media practitioners in developing countries, this manual from the Friedrich Ebert Foundation in Bonn (West Germany) summarizes theories, policies, and experiences pertaining to the role of communication in Third World societies. The nine major headings of the manual are as follows: (1) Explanation of Terms: Theoretical Considerations; (2) Developing-Country Research: From Cultural Arrogance to Ignorance; (3) Individualistic Modernization Theories; (4) Mass Communication and Interpersonal Communication; (5) Structure-Functionalistic Theories; (6) Change of Paradigms in Developing-Country Research: Dependency Theory and World-Systems Theory; (7) The Discussion of Cultural and Communications Imperialism; (8) The Position of Developing Countries in the International Flow of News; and (9) Conclusion: Consequences of Media Policy; the Outlook for the International Flow of Data. Available from EDRS in microfiche only for $.75.

- Fair, Jo Ellen. *The Role of the African Media in Patron-Client Relations: A Preliminary Look.* 1986, 33pp. (Ed 270 769)

Noting the many difficulties in conceptualizing and analyzing development communication, this paper enriches the concept by linking it with a particular form of political, economic, and social organization common to many developing nations – the patron-client network. A brief review of the literature concerned with definitions of development, development communication, and patron-client networks introduces an examination of the interrelationships between patron-client ties and development communication as social forces in a developing nation. The findings of a small content analysis of newspapers from Nigeria and the Ivory Coast are reported to provide an idea of the amount and type of development communication news items available to African readers, as well as the potential impact of the media's participation in the patron-client structure on the type of information disseminated. Available from EDRS in microfiche for $.75 and in paper copy for $3.60. ■

Barbara B. Minor, Publications Coordinator, ERIC Clearinghouse on Information Resources, 030 Huntington Hall, Syracuse University, Syracuse, New York, U.S.A.

Agriculture Courses Available

The U.S. Department of Agriculture, in cooperation with the U.S. Agency for International Development (AID) and universities throughout the United States, has announced its 1987 schedule of courses in agriculture and rural development. The four- to nine-week courses, conducted in Washington, D.C. or at universities in over 20 states, are in the disciplines of animal science and natural resources, economics and policy, management, education and human resource development, and production and technology. They are designed to provide developing-country participants with good technical knowledge and the opportunity to test and practice new skills. In the past, sponsorship has been through AID, FAO, international development banks, developing-country governments, foundations, and private organizations.

Among the courses offered is a seminar on Agricultural Communications and Media Strategies to be held at Iowa State University, Ames, Iowa, from June 22 to July 31, 1987. Media areas to be covered include radio, TV and videotape, print media, small media such as posters and flipcharts, and slide/tape photography.

To enroll participants or to request additional information cable or write to: Dr. Val Mezainis, Director, International Training Divison, Office of International Cooperation and Development, U.S. Department of Agriculture, Washington, D.C. 20250-4300. Telex ARIG WASH 64334, Mezainis OICD.

(**Kweekeh** *continued from page 5*)

Preliminary data show a significant rise in the number of people receiving vaccinations – in some cases a 300 percent increase was recorded. At Phebe Hospital in Monrovia, classes for nurse trainees were cancelled in order to handle the influx of people coming to be vaccinated. Fifty percent of the people questioned at Monrovian sites identified radio as their primary source of information about the vaccination campaign, and even more, 57 percent, cited radio in the Gbarnga area where a LRCN station is located.

These preliminary results suggest the importance of using local languages to inform targeted audiences by radio. By offering specific information – such as where to go, when, and why – and packaging it in the form of frequent spots and 15-minute dramas, an educational message has proven both popular and effective in Liberia. Likewise, the judicious use of posters and radio contests has helped to create excitement among the listening audience; people are wondering what type of programming LRCN will be offering next. ■

Mrs. Kweekeh is Director of the Liberian Rural Communications Network, which is jointly sponsored by the Government of Liberia and the U.S. Agency for International Development.

Managing Telephone Systems

by Robert Schware

Telecommunications organizations – both public and private – in many developing countries are rapidly expanding to meet an increasing demand and to improve the quality, particularly of their telephone service. Rapid and cost-effective expansion is often restricted by inadequate information gathering and processing, and by people who have insufficient management skills. A management information system (MIS) can be developed to provide the type of information that is needed to support these growing management functions. However, problems may appear when a sophisticated MIS, containing the latest technologies, is brought into an organization and receives all the attention, while other less technical issues are overlooked.

Dr. Robert Schware recently addressed these issues in a report for the World Bank's Division of Telecommunications, Electronics, and New Technology. Some important points made in this paper have been summarized below for readers who are interested in or responsible for establishing or updating telecommunication information systems in developing countries.

1. **The ultimate goal of an information system for a telecommunications service is to acquire or produce, and then use the data and information it needs for better management. The behavior and motivation of managers must shift from adopting the newest available technologies to learning to value information *itself* and then using it in decision making.**
2. **Building an effective MIS requires a thorough understanding and analysis of: the information flow among the departments; the information requirements of various managers; and the performance indicators that are consistent with the overall objectives of the telecommunications service. In many organizations a hasty and haphazard planning job precedes a premature plunge into the implementation of an MIS.**
3. **Knowing what the basic information needs are, and how to best organize that information are particularly important. Too often, manual data gathering merely assembles vast quantities of useless information, for it is often easier to continue collecting data than it is to critically evaluate the actual data requirements needed for effective decision making.**
4. Standards of accuracy need to be determined, and upper level management must periodically review these performance indicators for accuracy and consistency. This activity is seldom considered to be very important by managers.
5. **The role and influence of upper level management is a crucial factor in determining the success of MIS development. Information systems are too important to leave to technicians alone. Managers must be catalysts, ensuring that careful planning occurs regularly. It is their responsibility to be sure that all levels of management agree on the nature and the extent of their final information requirements; that all managers prepare a long term plan for providing the information required and arrange for new interim procedures and training; and that regular progress reviews occur to meet newly identified needs.**

With a well-designed management information system in place, a telecommunication organization can quickly identify problems and opportunities to better plan for future expansion, estimate ongoing capital and revenue requirements to maintain a financially sound telephone system, and produce accurate financial accounts and performance reports for their government or other funding agencies at the end of each financial period. ■

Robert Schware is a management information systems specialist and has consulted on the design and implementation of these systems for the World Bank, the UN Industrial Development Organization, and USAID.

Management Training Seminars

The Management Training and Development Institute, Washington, D.C., which offers skill-building seminars for international participants, has recently released its 1987 schedule. These seminars provide short-term training (5-12 days) in practical management and communication skills, focusing on the needs of developing country practitioners.

Seminars listed include Management Communication for Development, Project Planning, Implementation, and Evaluation, Entrepreneurship Training for Development, Managing Development with Microcomputers, Accessing Technical Information for Development, and Training and its Management.

For further information contact: Dr. Robert C. Morris, Executive Director, Management Training and Development Institute, P.O. Box 23975, Washington, D.C. 20026, U.S.A. Telephone (202) 863-0212.

A Communicator's Checklist

1 Publishing in the Third World: Knowledge and Development,

P.G. Altbach et al., editors, (Portsmouth, New Hampshire: Heinemann, 1985) 226pp.

This book provides a basic overview to the problems faced by Third World publishers, and presents some compelling arguments for the importance of publishing in the development of any country. The three editors have compiled an interesting set of provocative essays, each written by an expert in the field of international publishing. While the chapters vary somewhat in quality, the result is still effective, and most readers will find the background information to be quite useful.

The introductory chapter discusses the state-of-the-art of Third World publishing in general and gives brief explanations of some of the problems facing these publishers: international dependency, copyright, publishing balance, emerging technologies, distribution, and the economics of publishing. The principal theme of this chapter is that publishing is an integral part of a country's knowledge system and, as such, is crucial to educators, scholarship, intellectual life, and research. Publishing, which is, after all, both a business venture and a cultural resource is an important element in any society that outweighs its economic costs. The ability of a country to establish a viable, indigenous publishing capacity contributes to the economic and social development of that country.

In most Third World countries, the libraries and education system represent the principal market for books, and the second chapter of this overview discusses the challenges facing textbook publishers. Textbooks can improve the quality of education, but as the author of this chapter states, textbook publishing is dominated by developed countries. Indeed, an interesting phenomenon is the effect that philanthropic and aid programs can have: by providing low-cost or free educational materials, these programs work against the development of indigenous publishing concerns.

One of the chief issues in international publishing today is copyright, and the third chapter provides a detailed account of copyright principles and practices. The crucial question explored by this author is the appropriate definition of copyright: What can and should be included under copyright protection? The success of copyright depends on a compromise between public and private interests, between the rights of the author and those of the user. Policies in the field of intellectual property rights have to be defined in relation to policies for education, culture, and information and communications generally. The biggest challenge to copyright is the conflict between protection and access: the protection and encouragement of national culture, versus the need to have access to protected works as a tool for the development of education, science, and technology.

While this is a very interesting and thorough discussion of copyright issues and policies, it is disappointing to find that 1978 is the most recent reference used by the author. This, unfortunately, reduces the chapter to one which is historically important, but not one that readers can use to learn the current status of copyright.

Also discussed are the difficulties associated with book distribution in the Third World. Many of these problems have to do with the nature of the book industry itself: a book is not a standardized product, but a unique creation. The sale of one book does not guarantee a steady customer, and most Third World publishers are not well versed in the intricacies of consumer demand. In many countries, the necessary infrastructure is missing, and no publisher can begin to serve a nation's needs without the support of a sound and efficient network of competent wholesalers and retailers. Added to these general problems are other basic difficulties: a rural, widespread population that is hard to reach; poor transportation and postal systems; a market that must place basic needs before books; the preference for imported books; and a shortage of libraries and bookstores.

The premise of this author is that book reading has economic, cultural, social, and educational implications that must be recognized at a national level, and until this is done distribution problems will take on the proportions of a crisis. Through statistics and regional case studies, the author proceeds to support this pessimistic conclusion, and to exhort Third World publishers to turn their attention from the editorial, design, and production aspects of book publishing to improving distribution.

The remaining chapters of this overview are dedicated to case studies of particular regions or countries: Ghana, Kenya, Egypt, India, China, Philippines, and Brazil. These chapters are of varying quality and interest but, on the whole, provide insights into historical and regional causes for the current crisis in book publishing.

This book is recommended for those who need an overview of publishing in developing countries. Intended as a broad review of the current situation, the book has little new to offer to the expert in the field, but instead serves as a useful summary for the novice, or for those who have a general interest in the broader field of information systems and services for developing countries. ■

Available in the U.S. from Heinemann Educational Books, Inc., 70 Court Street, Portsmouth, New Hampshire 03801, USA, for US$35.00 and from Nansell Publishing Ltd., 6 All Saints Street, London N1 9RL, England for £28.50.

Reviewed by Wendy D. White, Information Services Manager for the Board on Science and Technology for International Development (BOSTID), National Academy of Sciences, Washington, D.C.

2 El Impacto Educativo de la Television en los Estudiantes del Sistema Nacional de Telesecundaria, (The Impact of Television on Students in the National Telesecundaria System)

by Alberto Montoya M. del C. and Maria Antonieta Rebeil C. (Mexico City: Cuadernos del TICOM, 1983) 123 pp.

Even the casual observer in Mexico cannot help but notice the growing number of private satellite dishes on the roofs of houses and apartment buildings. Not only in Mexico City, but in smaller provincial cities as well, these dishes stand out – incongruous, startling, but indicative of the growing phenomenon that is satellite television. Even for people without a dish, cable services are available. This phenomenon is not exclusive to Mexico; it extends throughout the Caribbean and northern Latin America. The proliferation of satellite dishes and cable TV is a clear sign that Mexicans and other Hispanics want what these devices bring to them – American television.

Even without this equipment, there is a plethora of television *a la americana* on Mexican networks, as well as advertising replete with American products and imagery. Indeed, authors Montoya and Rebeil present some intriguing figures indicative of the major role played in Mexico by television networks and advertising firms, including foreign advertisers.

- In Mexico, 86 percent of advertising fees come from TV, while in Europe – where broadcast structures differ – only 14 percent come from TV.
- In 1979, nearly one-fifth of all TV ad fees came from the Mexican government, a significant boon to commercial TV.
- Two of the three top advertisers on TV are large multinational companies, mainly American.

With these statistics in mind, the authors have studied the effects of television watching on Mexican adolescents, in particular how it affects their beliefs and attitudes about Mexico and the United States. Studied were 12- to 16-year-old students in the *Telesecundaria* system (Mexico's in-school TV program system), and whom the authors dubiously define as having greater sensitivity to TV since they are exposed to it in school as well as at home. Better simply to say that the subjects are adolescent students, not unlike other Mexican teenage students. The hypothesis is that the contents of commercial TV influence students' knowledge and attitudes, and the extent of this influence is directly related to the amount of time spent watching TV.

The hypothesis is essentially proven, although the figures are not individually overwhelming and the method seems to be less than rigorous. For example, it is possible that high identification with fantasy or with the American way of life motivates students to

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watch TV, rather than TV being the instigator of that identification. Perhaps many of the variables in the study are not related as clearly as is assumed. In any case, the authors do find some associations. The more their subjects watch TV, the more likely they are to believe what commercials say, to distinguish between social classes on TV, to take soap-opera plots as reflective of and applicable to real life, and to believe in personal sacrifice as the road to riches. In addition, heavy TV viewers are being "decultured" by the substantial quantity of American programming, especially on *Televisa* (the largest and most pervasive television network in Mexico). The figures indicate that these viewers show more admiration for foreign actors, would rather live in the United States than in Mexico, and are about evenly divided in their agreement or disagreement with the proposition that "the American way of life should be established everywhere." This "deculturation" increases among older students.

In terms of news and world affairs, TV is the most credible source among these students. However, they do not know much about current events – at least not those events the study asks about. The students had little understanding of the role the U.S. was playing in El Salvador or that of the Ayatollah Khomeini in Iran. Can we expect this kind of knowledge from this age group? Interestingly, they did know that oil was Mexico's strongest income generator.

The conclusions are neither new nor startling, simply corroborative of the growing recognition that TV is the agent of social culture and consensus, replacing to a certain degree the family, the church, and the political party. TV is a dominant, perhaps *the* dominant, cultural institution among these Mexican students. And, in Mexico, American programming is the dominant viewing fare.

It is common among Latin academics to decry this phenomenon, and the strong role of American TV within this now-dominant institution. The phenomenon is widespread; if you choose to study it you are likely to find it. If you choose to condemn it as a propagator of deculturation, you can do that as well, and justly so. What you cannot do is deny that it is happening or deny that this form of deculturation is being chosen by an impressive number of Latin Americans – and, in many cases, is being paid for by them through cable fees and the purchase of satellite dishes. Should this flight be stopped? Some would say yes. Can this stampede be stopped? Most would say no. ■

For information on how to obtain this and other communications-related Spanish-language publications write to: Cuadernos del Ticom, Universidad Autónoma Metropolitana-Xochimilco, División de Ciencias Sociales y Humanidades, Departamento de Educación y Communicación, Calzada del Hueso 1100, Colonia Villa Quietud, C.P. 04960, Delegación de Coyoacán, México D.F., Mexico.

Reviewed by Peter Spain, who currently is a Program Officer at the Academy for Educational Development with the PRITECH health interventions project.

3 Between Struggle and Hope: The Nicaraguan Literacy Crusade,

by Valerie Miller (Westview Press, 1986), 258pp.

As historian and critic, Valerie Miller reviews the Nicaraguan literacy crusade, a five-month campaign that took place in 1980 soon after the end of the revolution. It involved 500 thousand people, or about one-fifth of the population of Nicaragua, at a cost of US$12 million. She presents the country situation at the time of the crusade, discusses the multiple political and pedagogical purposes of the crusade, its planning, administration, and implementation, and appraises the effort as "an important and successful beginning step in the process of social transformation and nation building."

The author's background for the task embraces over 20 years of activity in Central America, that included work as a development specialist during the Somoza regime, a participant-observer in the literacy campaign, and a member of a U.S. Congressional fact-finding mission. Her review of this crusade was undertaken with the support of the Nicaraguan government, but was independent of government supervision. Her research methods included survey of pertinent literature, review of crusade documents and files, personal observations during the campaign, and interviews with key crusade members.

According to Miller, the Nicaraguan campaign was based on the belief that illiteracy and inequity are inextricably linked. The challenge of overcoming illiteracy becomes part of the larger challenge of overcoming inequity and creating more egalitarian social structures through which the poorer members of a society can participate in the exercise of both economic power and political decision making. As such, the campaign was a political effort to help people become more effective, productive, involved members of their nation while in the process of acquiring the skills of reading, writing, mathematics, and critical analysis.

In July 1979, just two weeks after the revolution ended, the new leaders began planning the literacy campaign. The entire country was surveyed to identify illiterates. Over 200,000 primary, secondary, and university students, as well as their teachers, were trained as literacy volunteers. In March 1980, the volunteers fanned out across the country and began their teaching assignments. The teaching strategy was to engage students in discussions based on photographs found in primers, followed by practice reading of politically-oriented sentences and then concentrating on key words and groups of syllables within those sentences. Mathematics instruction was based on relevant economic themes.

By the end of the campaign, August 1980, over 400,000 Nicaraguans were declared literate based on tests comprised of writing their own name; reading a short passage aloud; answering three questions based on the readings; writing a sentence from dictation; and writing a short composition. According to the official government figures, illiteracy was reduced from 40 percent to 13 percent as a result of this single campaign.

Based on this incredible statistic and on personal interviews, the author declares the campaign a success, claiming that "it provided the poorest and most abandoned members of society with concrete literacy skills, and a special awareness of their own potential and an ability to express themselves."

The book, unfortunately, does not succeed quite as well in all that it sets out to do – record the history of the campaign and give a critique of the campaign. It does provide a good historical account of the literacy crusade, discussing a great deal of detailed information and sharing revealing anecdotes – something so often lost in other campaigns of this type.

On the other hand, Miller does not present an impartial critique of this ambitious campaign. She discusses acknowledged problems, such as the need for linguistic sequencing and the need for more university students as teachers in the campaign. But she does not approach the basic premise upon which the proclaimed success of this campaign was based – providing those most in need with concrete literacy skills. Follow-up literacy campaigns are needed to build upon these basic skills: have they been implemented? Have new literates continued to practice their new skills, and have they been encouraged to do so? Adult literacy programs throughout the world have long been recognized as being very difficult to sustain; has this one been successfully sustained. If so, how?

Questions such as these lingered in this reviewer's mind: how literate are these people now? Perhaps Ms. Miller should write another book. ■

Available for US$35 in hardback and US$17.50 in paper from: Westview Press, 5500 Central Avenue, Boulder, Colorado 80301, USA

Reviewed by Nadine Dutcher, currently an educator at the World Bank. As a Peace Corps volunteer in the 1960s, she supported literacy activities with an artisan cooperative in Peru.

Learn to Manage Health Audiovisuals

If you would like to learn the techniques of managing a collection of audiovisuals from selection, evaluation, cataloging, classification, storage, and retrieval, to maintenance of materials and equipment, and the role the audiovisual resource person can play within educational or medical institutions, a course is being offered from August 3-14, 1987 by the British Life Assurance Trust for Health and Medical Education (BLAT).

The course is intended for people without formal library training who are responsible for running libraries or resource centers, particularly in developing countries, and for librarians wishing to extend their professional skills to help them manage audiovisual materials.

For further information contact: Bernadette Carney, Information Officer, BLAT Centre for Health and Medical Education, BMA House, Tavistock Square, London WC1H 9JP. Telephone 01-388-7976.

Supporting Development Communication

by Iain McLellan

There is a growing awareness in many developing countries that the mass media is not doing as good a job as it might in informing their people about development issues, providing vital information, and inspiring change. Before improvements can be made in existing media structures, there are some important questions that must first be asked.

What follows is a list of five questions prepared by two Food and Agriculture Organization consultants at the request of the Ministry of Agriculture in Cameroon to help them identify possible stumbling blocks in their effective use of the media to support development. They were presented at a conference in 1985 in Yaounde, Cameroon.

QUESTION ONE:

- *Is there support for a participatory approach to development communication that would encourage citizens to express their ideas and needs?*

Traditionally, development communications have used the "mass media" – radio, television, newspapers – to funnel information from the government to the general population. More and more, however, development planners are realizing the severe limitations of this one-way information flow and are enlarging the possibilities for message exchanges by involving smaller media such as audio cassettes, regional radio, closed-circuit video, slide shows, flannelgraphs, and flipcharts, and decentralizing the communication process as much as possible.

The goal of the participatory approach is to stimulate and promote self-help and active participation of rural people. By giving them a voice they become more directly involved and interested in their own development.

QUESTION TWO:

- *Is it possible to disburse development communication resources throughout the country, and allow planning, testing, production, and use of the media on the local level, while guidance, technical assistance, national level initiatives originate from a central location?*

Many developing countries are quite culturally and ecologically diverse. The tendency in the past has been to centralize the mass media and to communicate the same development messages to the entire country. However, decentralized communication usually enables governments to respond to regional needs better and to coordinate the distribution and activities of field workers.

While there is a need for a certain degree of centralization of the media to inform a country of major initiatives or programs, if the goal is to solve specific problems in specific locations, it is better to prepare those messages at the local level.

QUESTION THREE:

- *Is there political support for identifying and then using the most effective languages or dialects for development communication messages?*

If a government's goal is to effectively communicate development information through the mass media to its rural population and to the urban poor, the most likely way to reach them is through the use of vernacular languages or pidgin dialects which greatly increase the interest level and the depth of understanding of target audiences.

It is unfortunate that much development communication material is still being broadcast in languages that the intended audiences cannot understand very well, if at all. Although it may be easier to discuss development topics with experts in languages that have large technical vocabularies, the potential impact of the message will be lost because of the small size of the audience that can understand what is being said.

QUESTION FOUR:

Is the government willing to embark on a systematic development communication program, carefully choosing the most appropriate media that reflects the cost-benefit ratio, the development of appropriate institutional infrastructures, and the need for extensive training for staff to operate and maintain modern communication technologies?

Perhaps one of the most imposing challenges for development communication project planners is to determine the type of equipment that will be needed and to prepare for the efficient use of it once it is in place. The most successful projects have been those that have created an institutional niche for it by attracting and training local personnel in how to meet the daily needs of such a project.

Television is perhaps the most obvious recent example of an expensive medium that has tended to sometimes overshadow other media which have proven to be more cost-effective as educational tools. For example, the producers of *Radio Rurale* in Senegal complain that while their programs reach 80 percent of the population, television reaches only 15 percent of the population but receives 80 percent of the communication budget.

QUESTION FIVE:

Should pilot projects always be run before large-scale development communication campaigns are launched? If pilot projects are undertaken, at what pace and scale should they be conducted?

It has been shown time and again that by conducting several small-scale pilot projects, and by working in stages toward long-term goals, the chances for having a successful development communication campaign are substantially increased. Once the use of a particular medium proves successful in one region, that methodology and experience can be built upon, shared, and used in other regions.

Arguing against large-scale communication projects is the fact that while it may be easier to purchase communication technology and to place it throughout a country, it is another matter to train people adequately and quickly enough to implement such large endeavors. The larger the project, the wider the impact of errors. No amount of electronic hardware can replace the knowledge acquired through guided, on-the-job experience.

While the above questions were directed to the Cameroonian Ministry of Agriculture, their applicability can be extended to other Third World countries because of the general nature of development communication needs. Vast pools of information already exist to assist people who are trying to adjust to rapidly changing environments. If the right questions are asked at the right time, that information is much more likely to reach those who need it the most.

Iain McLellan is a Canadian freelance journalist who has worked with various international organizations designing and assessing development communication strategies and campaigns.

Send Your Ideas

Dr. Weade Wureh of the Department of Mass Communications, the University of Liberia, met with the Clearinghouse staff in October 1986 to gather information in preparation for a communication workshop her department has planned in order to design a curriculum that will more effectively train its students in development communication.

It occurred to us that many of you might have some helpful suggestions about the type of training you believe students need to develop effective communication strategies for audiences in their own countries. Why not share your ideas with us? The University of Liberia will benefit from your contributions as will other training institutions that may be preparing to launch similar communication programs.

Send your ideas to: Training for Development Communication, Clearinghouse on Development Communication, 1255 23rd St., NW, Washington, D.C., 20037, USA. Once we have sorted through your suggestions, we will prepare an article summarizing what we have received, and will of course, pass them on to Dr. Wureh at the University of Liberia.

Mahaweli Community Radio: A Promising Experiment in Sri Lanka

by Nandana Karunanayake

Ensuring a better quality of life for the poor has become an overriding objective in the developing world. Since 1981, in its effort to combat rural poverty and increase food production, Sri Lanka has been experimenting with a novel approach to help rural people help themselves through community broadcasting.

Sri Lanka is a country composed of numerous ethnic, linguistic, and religious populations, most of whom are involved in one way or another with agriculture. Although its literacy rate is high – about 89 percent – and an impressive health care delivery system has been put in place, Sri Lanka continues to lag behind in its agricultural output and must import the bulk of its essential food requirements.

To right this critical imbalance, the government has undertaken a massive irrigation development program called the Mahaweli Development Project to open more land for rice paddies and for the production of other essential food items. To support the farmers settling this land, the Sri Lankan government is making use of the existing mass media by establishing community radio stations throughout the Mahaweli Accelerated Development Project area that are administered by the Sri Lanka Broadcasting Corporation (SLBC), with assistance from Unesco and the Danish International Development Agency (DANIDA).

The Mahaweli Community Radio (MCR) approach is a unique departure from traditional program development in Sri Lanka. Usually, programs destined for rural audiences are the result of a few short visits to villages where interviews are quickly recorded, but the conception and final editing processes are done in the isolation of an urban setting, far from the source of the program interviews. MCR has been striving since its inception to deviate from that traditional pattern by involving the target audience in program identification, design, and production.

One of the initial tasks of the senior staff was to introduce program producers to a new role with new responsibilities; not an easy assignment – particularly when it came to sharing decision making with an audience. SLBC producers needed an orientation to the concept of participatory broadcasting. A series of training programs was introduced in 1981 as a prerequisite to implementing the new approach. As a result of this training, MCR producers no longer come to villages as experts to teach or preach, but to listen, learn, and work directly with the people.

The Production Process

MCR has formed three mobile production teams that operate on an alternating schedule. Each week one team will be in a village to do research and recordings, another team will be in the office preparing their program, and the third team will be completing a new set of recordings in a different village.

In consultation with their colleagues and the project management, producers select a village for a future broadcast. Initially, one of the producers will pay a short visit to the village and hold preliminary discussions with the residents to solicit ideas. Topics considered may range from development issues to local cultural concerns.

When the production team arrives, MCR producers make a point to involve the villagers in the entire production process. Once the villagers become familiar with the production team, it is easier to break down the social and communication barriers and both groups work together more naturally. The production crew mixes freely with residents, speaks the local dialect, and tries to live as typical villagers. They go to the Buddhist temples, community centers, or the tea parlors so they can talk with villagers about their concerns and interests. This approach results in the villager being the focal point and the producer being the facilitator throughout the production process.

Focusing on the exchange of experience among villagers is an integral element of the MCR approach. Research has shown that villagers prefer to listen to their successful peers: an innovative farmer giving an account of his experience with a new agricultural method is "one of them" and someone who lends credibility to a program.

The villagers decide which problems need prompt attention and consider possible solutions. At this point, the production team joins in the discussion that results in final identification of topics to be focused upon during the radio broadcast.

Before the actual taping, topics are further refined, village "actors" are identified, and format and program duration are all determined. Most programs are recorded in the village and the editing is done on the spot. A final edited version is left with the villagers so they can be assured the tape that is broadcast is the one they finally approved before the producers left their village.

The programs are broadcast from 7:00 to 8:00 p.m. 3 nights weekly over regional transmitters covering the settlement areas of the Accelerated Mahaweli Development Project.

Unexpected Benefits

The relationship between MCR and the villages has developed into one of mutual respect. For example, two MCR producers visited a village in May 1986 to discuss program possibilities with the village Buddhist priest. It was learned that a large number of the villagers were not legally registered as married and had had many children from these consensual unions.

The two producers discussed this matter with the Resident Project Manager of the Mahaweli Development Authority. The outcome was the organization of a mass marriage registration camp in the village. Those who had been living together as husband and wife without legally registering the marriage arrived at the camp and registered. A program based on this marriage ceremony was broadcast in June 1986.

Dealing with Bureaucracy

Helping to solve development problems calls for coordination and/or commitment

(Continued on page 12)

Villagers listen to a program they helped to produce in their own community.

(**Karunanayake** *continued from page 11*)

from a number of government institutions and officials. How does MCR become involved in solving community-wide problems? Although MCR cannot help with complex issues like water management or adequate health care, they can help with specific technical matters regarding crop production or livestock management at the village level. In these situations, the MCR can serve as the link between the village and the specialists who are trained to help them.

Types of Programming

Along with its focus on rural development, from the start, the MCR has had tremendous success with its cultural programming. A cultural format that includes folk songs and tales or poems helps to attract listeners and participants through entertainment. The Cultural Show has been produced once a week in one of the Mahaweli settlements for the past five years. It typifies the participatory approach, attracting local talent and wide attention wherever it is produced.

> "...farmers applied knowledge gained from the program to their daily lives."

Other types of productions made with the help of villagers include: dramas depicting a special agricultural topic, interviews with innovative farmers, a news feature in the form of a drama, and comedy sketches with development messages.

Program Evaluation

In 1984, an evaluation was performed by the Audience Research Division of the SLBC after 352 half-hour programs were broadcast. A stratified sample of 1,000 listeners was interviewed by a trained team of surveyors. The results were very encouraging. Thirty percent of the respondents said they listened to MCR broadcasts every day it was aired, and 56 percent listened frequently. Of the 1,000 respondents, 85 percent indicated they listened to the program from start to finish, and 34 percent were able to recall contents from past programs. The most common reason given for listening was that it provided "very useful information."

The most important finding was testimony that farmers had applied knowledge gained from the programs to their daily lives. For instance, they have used information about fertilizer, high-quality seed, and other related information in their farming activities. A significant number of listeners attributed their bumper harvests to the application of scientific techniques of farming learned from the broadcasts. Encouraged by these results, the SLBC opened another community radio station in Girandurukotte in June 1985.

Epilogue

There is widespread interest in expanding the MCR concept throughout the country. The Audience Research Division of the SLBC is normally called upon to conduct a mass media feasibility study before launching a community radio station. Recently another media feasibility survey was undertaken in a community falling within the Mahaweli Accelerated Development Project area. Of 6,000 households in this community, about 4,800 possessed radio sets, and radio was found to be the most widespread and popular medium of communication. Based on the spectrum and nature of the development problems needing special attention, the study determined that there was a clear need for a community station in the area.

As a part of the proposed expansion of the MCR approach, a new scheme of training has now been initiated. A new group of 13 producers was recently recruited and given three months intensive training. Each trainee was assigned to a rural village in the MCR to become familiar with that village's environment. Each then had to design a development project that used the MCR to help disseminate the development message.

The Mahaweli Community Radio Project has learned much and come a long way since its inception in 1981. Its hope is that the plans for the future will further consolidate the credibility it has achieved thus far in communicating ideas about development to the rural population of Sri Lanka.

For further information about the Mahaweli System, please contact: The Coordinator, Mahaweli Community Radio, Sri Lanka Broadcasting Corporation, Independence Square, Colombo 7, Sri Lanka. ■

Nandana Karunanayake is Director of Audience Research at the Sri Lanka Broadcasting Corporation.

Agricultural Communication Courses

The International Program for Agricultural Knowledge Systems (INTERPAKS) is expanding its short course program for 1987, which runs from May through September. INTERPAKS focuses on how to make agricultural and rural development programs in developing countries more effective.

Three courses will be held at the University of Illinois Urbana and tailor-made courses can be designed to meet the specific needs of a project which can be conducted either on campus or at overseas locations upon request. On-campus courses include "Training of Trainers for Agricultural and Rural Development," "Organization and Management of Agricultural Extension Systems: A New Look at Knowledge Transfer," and "Retrieval and Dissemination of Technical Agricultural Information."

For brochures describing course content, cost, and sponsorship information, contact John Woods, Director, INTERPAKS, University of Illinois, 113 Mumford Hall, 1301 W. Gregory Drive, Urbana, Illinois 61801, USA.

The following piece recently arrived at the Clearinghouse from one of our Chinese readers. It is the first such piece the DCR has received from China, and we are pleased to include it in this issue. We hope Wang Baoming's colleagues will submit other articles for our consideration.

A Glimpse of the Chinese Health Audiovisual Education Program

by Wang Baoming

A bright spot that shines in China's Health Audiovisual Education Program is the Film and Video Department of the *Health Daily*. Since 1982, this department has produced about 30 films and videos. They have also released about 800 other Chinese health, science and education films, as well as a foreign science film translated into Chinese by the Film and Video staff.

Subjects covered by the films include family planning, maternal and child hygiene, nutrition, water sanitation in rural Chinese communities, and traditional Chinese medicine practices. Other recently produced films are entitled: "Music Psychotherapy," "Health Charge," "Family Nutrition," "Scorpion," "Head Acupuncture Treatment," and "Mother and Baby Together." Prizes were awarded these films at a Chinese Health Science film competition. ■

Signo y Pensamiento: A Spanish-Language Journal

Signo y Pensamiento (Themes and Problems in the Field of Communication) is a biannual, Spanish-language journal published by the faculty of Social Communications of the Universidad Javeriana in Bogotá, Colombia. It examines the socio-cultural implications of communication, both in theory and in practice. Each issue contains essays, commentaries, reports, interviews, research studies, and regular contributions from professors and students in the Communications department.

Available for US$20.00 per year or US$35.00 for two years. Make checks payable to the Universidad Javeriana and send to: *Signo y Pensamiento*, Facultad de Comunicación Social, Pontificia Universidad Javeriana, Carrera 7a. No. 43-82, Piso 7o - Edificio Angel Valtierra, Bogotá, Colombia.

TUNING IN

How Large the Gap?

by Julianne Gilmore

"Serendipity" is making fortunate discoveries by accident. The word covers the entire range of human endeavor, even disciplines as esoteric as data analysis. Every researcher has toyed with data already collected for other purposes, turning it this way and that, just to see what other relationships might be held within. Sometimes serendipitous discoveries are made.

One such discovery came about when I examined the evaluation data gathered by the Agency for International Development's (AID) Radio Language Arts Project in Kenya. The project used radio to teach rural elementary school students English as a second language. The learning gains of the radio students were quite impressive; yet even with these impressive gains and the advantages offered to the rural students by radio instruction, the rural radio students were outperformed by urban students who received only traditional instruction.

Measuring the Gap

The extent of the "rural/urban gap" was demonstrated in an informal comparison test that the project carried out in Nairobi. At the very end of the project, a small sample of Standard 1, 2, and 3 students who had not had radio instruction was given the same English language achievement tests that the project's radio and control students had taken earlier. The results of that test could be analyzed to yield an informative, albeit crude, measure of this "rural/urban gap." Table One displays the differences in the student performance averages between the rural control group and the urban group. The rural control group provided performance scores with none of the effects of the radio intervention. Since the urban group had not received any radio instruction, the groups were comparable because neither received any special interventions and because both groups represented the output of the educational system "as is."

Table 1

Average Differences Between Urban and Rural Control Groups

Standard I	
Listening	16.7
Reading	18.3
Standard II	
Listening	15.7
Reading	12.8
Writing	3.6
Standard III	
Listening	19.3
Reading	19.5
Writing	3.8

The disparity is evident, even with this preliminary measure. Given the scores of the rural students, the differences in the urban and rural averages appear sizable; urban averages were nearly double rural averages. But the term "sizable" offers little perspective in understanding its magnitude. With full appreciation for the maxim, "Figures don't lie, but liars figure," I propose a measure for the "rural/urban gap."

A Proposed Measure

To quantify the magnitude of difference between the rural and urban student performance, I suggest expanding the use of effect sizes (effect sizes provide a rough, though standardized, calculation of how successful an intervention has been) to measure performance differences between urban and rural cohorts, and to quantify targets of performance improvement for rural students, thus providing a measure of "the effect size gap" – how much rural students must gain to perform comparably to their urban brothers and sisters.

A look at the mathematics involved in the calculation of effect size and effect size gap may make its potential usefulness clearer. The substantive difference between the two can be seen by replacing the mathematical formulas with descriptive terms. Effect sizes are calculated by using the difference in the averages of the control and treatment groups, the effect size gap is calculated by using the differences in the averages of the rural and urban groups.

In essence, the urban average becomes a target for what a planner would have rural students achieve. For the purpose of measuring the rural/urban gap, using the urban average is appropriate. In fact, any relevant number can be used as a target score, for example, a desired performance score on an achievement test, although ceiling effects may have to be taken into account.

The formula for determining effect size is:

$$\text{effect size} = \frac{\left[\begin{array}{c}\text{radio instruction}\\ \text{group average}\end{array}\right] - \left[\begin{array}{c}\text{no radio}\\ \text{instruction control}\\ \text{group average}\end{array}\right]}{\text{standard deviation (control)}}$$

Similarly, the formula for determining "effect size gap" is:

$$\text{effect size gap} = \frac{\left[\begin{array}{c}\text{average urban}\\ \text{performance}\\ \text{scores}\end{array}\right] - \left[\begin{array}{c}\text{average rural}\\ \text{performance}\\ \text{scores}\end{array}\right]}{\text{standard deviation (rural)}}$$

Potential Applications

From this vantage point, one can see the potential applications. Since effect size gap is measured by the same standard as effect size, both offer insights not only into how wide the rural/urban gap is, but in what needs to be done to bridge it. An *effect size gap* tells educational planners how much rural students must gain to perform comparably with urban students; an *effect size* tells planners how much rural students could be expected to gain using a particular intervention. Planners can benefit from both pieces of information – how far the rural students have to go and how far any one intervention can take them.

In Table 2, the first column shows the differences in the averages of the urban and rural students. The second column contains the standard deviations of the rural control group. Finally, the "rural/urban gap" is measured in terms of effect sizes.

Table 2

Effect Size Measurement of the Rural/Urban Gap

	Average Differences (Urban-Rural)	Standard Deviation (Rural)	Effect Size Gap
Standard I			
Listening	16.7	8.7	1.9
Reading	18.3	8.7	2.1
Standard II			
Listening	15.7	4.6	3.4
Reading	12.8	5.5	2.3
Writing	3.6	2.4	1.5
Standard III			
Listening	19.3	7.7	2.5
Reading	19.5	9.3	2.1
Writing	3.8	2.1	1.8

The differences in terms of effect what achievements have to be made by rural students in order to compete with urban students, are substantial. An effect size of two is tantamount to moving an average rural student from the 50th percentile to the 98th percentile group.

No planner would attribute the effect size gap entirely to the quantity and quality of instruction; the social, economic, and cultural advantages of urban living have a profound effect on educational opportunity. Targets for educational interventions would, therefore, have to be adjusted downward to allow for these advantages.

Moreover, any measure of the rural/urban gap is likely to be quite wide in English compared to other subjects. In terms of learning English, urban students not only benefit from the general advantages of urban living, but also from more out-of-school opportunities to learn English. In Kenya, for example, much television programming is done in English, and urban students are more likely to have access to TV. Furthermore, English is in common use in Nairobi.

Nevertheless, considerable improvements must be made in education in rural areas.

The figures used in this illustration were a by-product of testing the effects of interactive

(*Continued on page 14*)

(**Gilmore** *continued from page 13*)

radio instruction in Kenya. With this tool in hand, educational planners in developing countries could begin to determine the effect size gap for each subject area at all grade levels. Test results, such as school-leaving exams (readily available in any country), could be used to determine the rural/urban effect size gap.

The next step would be to determine which intervention(s) to select in order to reduce the rural/urban gap. A combination of interventions will probably be the best immediate solution. Coordinating the use of radio and tape recorders, for instance, would be a very effective combination, allowing students to do exercises on their own or to make up missed lesson.

Conclusion

By using the effect size gap measure, educational planners can look beyond the basic issues of intervention costs and numbers of students reached, and can ask valuable questions such as: How much more will the students learn (the predicted effect size gain)? and, How much will the rural/urban gap shrink?

Equity and quality issues take on renewed importance with the ability to determine the cost-effectiveness of interventions designed to bring about comparable performance gains. Are limited budgets better spent raising the performance of all rural students marginally, or of just a few measurably? Though never easy, the choices become starker because decision makers have more predictive information.

My discussion has been a preliminary one. No doubt, having a standard measure that could help to determine achievement targets will be controversial. The implications of the mathematical, statistical, and educational assumptions have not been examined here. My purpose was to propose a way of measuring the rural/urban gap, and to offer that measuring device along with verified performance gains as useful pieces of information for educational planners. ■

Julianne Gilmore is a Project Officer with the Education Office in the Bureau for Science and Technology, at the U.S. Agency for International Devlopment.

AIBD Broadcast Training

The Asia-Pacific Institute for Broadcasting Development has released its proposed schedule of courses for 1987. Courses range from technical skills development in writing and production to improving management techniques. For further information about courses, starting dates, and locations, write to The Director, Asia-Pacific Institute for Broadcasting Development, P.O. Box 1137, Pantai, 59700 Kuala Lumpur, Malaysia. Cable: UNESBROAD, Kuala Lumpur; Telex: MA 30083 APBRO.

(**Killmayer** *continued from page 15*)

economique.

Afin que l'information parvienne jusqu'au niveau le plus bas, un "package de brousse" reprenant les images et les commentaires du vidéodisque a été réalisé.

Le conseiller agricole qui a manipulé le programme peut donc, à l'aide de ces images, expliquer au paysan, dans sa langue, ce qu'il a compris au centre de formation.

De même que le programme interactif, le package est de forme modulaire et chaque conseiller peut l'aménager comme il le désire, selon l'argumentation qu'il veut avancer.

Conclusion

Le vidéodisque interactif "Ecole des moniteurs" est un produit expérimental destiné à une évaluation psycho-pédagogique et technique.

Le mariage entre informatique et audiovisuel, le vaste contenu agronomique et technico-économique en font un outil particulièrement nouveau qu'il est nécessaire de tester auprès d'un public assez large.

Les premiers résultats de l'expérimentation réalisée en France sur le produit "Gestion" semblent montrer que le vidéodisque peut servir de référence (sorte de grand livre à partir duquel on peut calquer un raisonnement ou effectuer des comparaisons). C'est pour cette raison qu'il peut être la source de formations en cascade par l'intermédiare de supports image plus transportables.

Les résultats de la validation sur le terrain sont attendus dès la mi 1987. ■

Alain Killmayer est ingénieur en agriculture et Chef de projet "Vidéodisques Interactifs Agricoles" de l'Ecole Supérieur d'Agriculture de Purpan (anciennement projet CMI), à Toulouse, France.

The following is an English abstract of the above article.

Interactive Videodisc in the Ivory Coast

by Alain Killmayer

The World Center for Informatics and Human Resources (*Centre Mondial Informatique et Ressource Humaine – CMI*) located in Paris, France, has recently been collaborating with the Training Division of the African Institute of Economic and Social Development (INADES-Formation), the Ivory Coast Textile Development Company (CIDT), and the Secretary General for Informatics (SGI) in a pilot project aimed at introducing videodisc technology for training agricultural extension agents in the Ivory Coast.

The purpose of this project is to provide agriculture extension agents with up-to-date information in the four basic agronomic subjects of climatology, soil science, botany, and cultivation techniques, while demonstrating to them the links between these areas in order to promote a greater technical and economic awareness in their field and to make them more effective field agents.

In 1984, CMI began applying interactive videodisc technology to training in a rural setting. With assistance from INADES-Formation and CIDT, a multidisciplinary team of agronomists, filmmakers, graphic artists, and information specialists selected a training site in the Ivory Coast and produced a film of a model farmer in the northern region of the country to be used as part of the training program.

In 1985, more materials were produced including nearly 1000 slides, 100 animated cartoons, 30 minutes of taped commentary, 200 illustrations, and 200 technical information notes, all of which were then mounted and mixed, resulting in the production of 50 training videodiscs.

Participants are shown a film at the beginning of the videodisc training session, that depicts the experiences and challenges of an agricultural agent in a rural village. The film also shows trainees what to expect during the training program and raises questions that are addressed later. This is followed by an interactive session that shows participants how to use the cursor-pointing device or "mouse." With this "mouse," the trainee can examine in detail, skip, or exit any section of the videodisc program through a bar menu at the bottom of the screen. Technical information notes can also be accessed at any time through the main menu or within one of the subject areas.

The information contained in the interactive portion is divided into short sequences that can be organized according to the user's needs, resulting in a tailor-made audiovisual program. Also, another function allows the user to visualize the entire learning process that has transpired during the interactive session, or any one of many intermediate steps within it. In all, more than six hours of the training program can be viewed without seeing the same information twice.

Agriculture agents are also provided with a "field package" containing visuals and printed materials adapted from the videodisc training program. Those who have been trained on the interactive program can, with the help of this field package, transfer newly acquired knowledge to small farmers using local dialects.

The interactive videodisc training program is an experimental project that combines informatics and audiovisuals in an innovative and flexible package using the best features of these technologies in support of agricultural training. Pedagogical and technical evaluations are underway in order to test its effectiveness on a large target audience. Evaluation results are expected in mid-1987. **(Editor's note: DCR will attempt to follow this activity and report in a future issue any evaluation results as they become available.)** ■

Alain Killmayer is an Agricultural Engineer and Project Manager of the "Interactive Videodisc Project," which is now sponsored by the College of Agriculture of Purpan in Toulouse, France.

Translated and abstracted by Robert Vittel, Information Specialist, Clearinghouse on Development Communication

"L'Ecole des Moniteurs:" Vidéodisque de Formation des Conseillers Agricoles de Côte d'Ivoire

par Alain Killmayer

En 1982, le Centre Mondial Informatique et Ressource Humaine (CMI) mettait au point un nouvel outil multimédia: le vidéodisque interactif.

Il s'agissait là d'un mariage entre un lecteur de vidéodisque optique (pouvant supporter tout type d'images: cinéma, diapositives, dessins...), un micro ordinateur (capable de piloter le disque et d'ordonner les images en scénarii multiples) et une carte d'incrustation vidéo (capable de gérer un écran TV tactile et de mélanger des textes et des graphiques venant du micro ordinateur à l'image vidéo).

Après la réalization d'un premier produit expérimental d'enseignement des langues, le groupe agriculture, résidant à Toulouse, a décidé d'appliquer cette méthode à la formation de masse en milieu rural.

Deux projets ont été menés conjointement, l'un destiné aux agriculteurs français et qui traite de la gestion, l'autre destiné aux conseillers agricoles de Côte d'Ivoire.

En 1984, un VSNA (Volontaire du Service National Actif) est parti en poste à l'Institut Africain pour le Développement Economique et Social (INADES Formation) pour déterminer avec les formateurs de terrain; le public cible, les concepts à traiter, et écrire un premier scénario.

Cette même année, une équipe pluridisciplinaire, composée d'agronomes, de réalisateurs cinéma, de graphistes et d'informaticiens fut mise en place pour établir le scénario interactif, réaliser les premierès images en vue d'une validation sur terrain et enfin tourner un film de 15 minutes chez un agriculteur modèle du nord de la Côte d'Ivoire.

Ces differentes étapes ont été menées à bien grâce à la participation d'INADES Formation et de la Compagnie Ivoirienne pour le Développement des Textiles (CIDT).

L'année 1985 a été consacrée à la constitution d'une banque iconographique de près de 1000 diapositives, à la réalisation d'une centaine de dessins animés sur palette graphique et enfin au montage, mixage son, et à la gravure de 50 vidéodisques.

Cette même année, le vidéodisque devint un des projets pilotes de l'information en Côte d'Ivoire.

Depuis, le programme informatique de pilotage a été écrit, ainsi que les 200 pages écran de fiches techniques, grâce au langage auteur réalisé au sein de l'équipe agricole.

En parallèle, le matériel réalisé pour la validation du produit sur la gestion a subi un test de fiabilité à Abidjan et à Bouaké.

Le Point à l'Heure Actuelle

Après mise au point technique de l'appareil et présentation du produit "Ecole des moniteurs" en Côte d'Ivoire, la phase de validation va débuter.

En effet, avant de "lancer" un produit nouveau issu d'une technologie européenne, il nous a semblé primordial d'en tester l'impact psycho-pédagogique, la portabilité technique et le rapport prix-efficacité.

C'est pour cela que le Secrétariat Général à l'Informatique (SGI) prend en charge l'expérimentation à partir de Septembre 1986 sur des sites test de formation continue ou initiale (CIDT Formation, IAB ...etc). Le CMI, quant à lui, pilotera cette expérimentation par l'intermédiare d'un coopérant VSNA qui sera en poste au SGI.

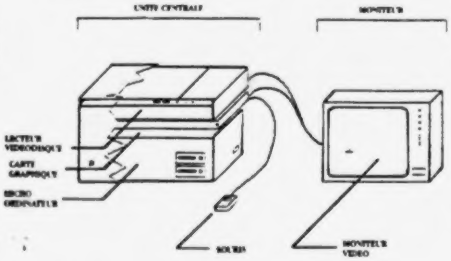
Le Matériel

Le poste de consultation se compose d'un écran de télévision et d'une souris qui est la seule interface avec l'utilisateur (le produit s'adressant au grand public, le clavier et l'écran du micro ordinateur ont été supprimés).

L'unité centrale, de la grosseur d'un gros micro ordinateur, se nomme *VDI graphique Laser 256K*. Elle contient:

- deux lecteurs de disquettes: l'un pour le programme de gestion des images, l'autre pour enregistrer les voies suivies par les utilisateurs (but d'évaluation).
- une unité logique dérivée d'un micro ordinateur compatible PC (Micral 30).
- un lecteur de vidéodisque laser vision
- oune carte graphique d'interface et d'incrustation vidéo du CMI.

Pour fonctionner, le matériel n'a besoin que d'une alimentation électrique de 220 volts.



Le Contenu Quantitatif du Programme

Le programme contient:

15 minutes de film sonore,
1000 diapositives,
30 minutes de commentaires,
100 dessins animés sonores,
200 dessins,
200 fiches techniques de cultures,
100 fiches diverses sur la mécanique et la prophylaxie des animaux

répartis comme suit sur le disque optique et sur disquette.

L'Approche Interactive

Dès l'ouverture du programme, un film de 12 minutes est présenté: il raconte les aventures et mésaventures d'un conseiller agricole dans un village. Ce film brosse un tableau du contenu du disque et joue le rôle de déclencheur de questions qui pourront être résolues dans la partie interactive.

La partie interactive commence, après un apprentissage rapide du maniement de la souris, par un menu qui peut amener l'utilisateur dans 4 matières ou dans les fiches techniques.

L'information contenue dans cette partie interactive a été découpée en petites séquences très brèves qui sont construites pour pouvoir être agencées l'une derrière l'autre dans des ordres differents sans biaiser le sujet. C'est l'utilisateur par ses choix qui construit son ou ses propres montages audiovisuels. En effet, à tout moment, un menu barre présent au bas de l'écran permet de survoler la partie, de l'approfondir ou de la quitter.

C'est pour cela que l'information a été organisée en plans superposés:

- le plan primaire correspond aux remises à niveau par matière (cours général d'agronomie).
- le plan secondaire correspond aux compléments d'information et aux voies de synthèse.
- le plan tertiaire correspond à un supplément d'information sur le sujet traité.
- enfin, la partie fiches techniques, compulsable à partir du menu principal (comme une matière), peut l'être aussi de l'intérieur d'une matière; c'est la quatrième plan de consultation thématique sur le sujet traité.

De plus, une fonction cachée permet à l'utilisateur de visualiser la démarche qu'il a eue dans le programme et de demander à voir l'une quelconque des parties infinitésimales.

Cette partie interactive est complètement ouverte: il y a ni début ni fin, mais une utilisation systématique permettrait, théoriquement, de visualiser plus de 6 heures de programme sans voir deux fois la même chose.

Le Produit et ses Dérivés pour une Formation en Cascade

Le produit ne peut s'utiliser qu'en salle de formation car il nécessite au minimum une alimentation électrique et une table. Il s'adresse en particulier aux conseillers agricoles. Le programme a pour but de permettre la remise à niveau des utilisateurs dans les quatre matières agronomiques: climatologie, pédologie, phytotechnique, travail du sol, et de leur montrer les voies de synthèse inter-matières et de favoriser un approfondissement technico-

(*Continued on page 14*)

Agricultural Communication for Rural Development in Sri Lanka

by Nimala Amarasuriya

[Sri Lanka has taken the commendable step of acknowledging and then dealing with the problem of agricultural poisoning. Many other countries have not yet diagnosed or reported their own, similarly critical problems as such.]

Poisoning by agricultural chemicals (agrochemicals) is a major health hazard in Sri Lanka today. As its agricultural production has increased in recent years, so has Sri Lanka's dependence on chemicals such as fertilizers, pesticides, and herbicides increased. As with other chemicals, safe and wise use of agrochemicals requires a more sophisticated understanding of science than most farmers in Sri Lanka now have. Complicating matters further is the higher illiteracy rate of the rural population. An ongoing program being conducted throughout the country is challenging this growing threat by teaching farmers how to use agrochemicals.

A WHO survey conducted in November 1983, reported that Sri Lanka had the highest pesticide poisoning death rate in the world with corroborating evidence from a recent national survey indicating that 16,000 people suffer from pesticide poisoning annually. Medical authorities believe the chronic and undetected poisoning caused by regular, unintentional intake of small quantities of pesticides as residues in food are far greater than records show and are an immediate danger to the entire population.

The rural farming population is, of course, the most vulnerable to acute agrochemical poisoning. Illiterate farmers in particular, unaware of the dangers of most chemicals they handle, sometimes test their mixtures by dipping a finger into the solution to taste it for strength. The solution's contaminated vessel may later be used for family bathing. Empty chemical cans and bottles are used to store coconut oil and other consumer liquids or even medicines. Although legislation was passed in 1980 regarding the use of pesticides in Sri Lanka, its enforcement has proved difficult. Agrochemicals are illegally transported in the same vehicles with consumer goods such as rice, flour, and sugar; they may be stacked alongside consumer goods in stores.

Fighting the Problem

Since 1981, the Sri Lanka Association for the Advancement of Science's (SLAAS) Committee for the Popularization of Science (CPS), has conducted a program to combat this misuse of agrochemicals. The Committee is comprised of volunteers from university staff, research scientists, medical specialists, environmentalists, and plant protection officers from the Department of Agriculture. They worked together to develop a unique program to train information agents and eventually farmers, on the correct use and safe handling of chemicals. Some funding is provided by the parent association, and in 1986, the British Council provided money to continue the program for another year.

In the past, extension agents have instructed farmers in the use of pesticides, but these efforts were not getting the message across. Taking a different approach, the Committee selected school children from farming communities as the disseminating agents. There are several good reasons for this selection: students are amenable to training, enthusiastic and idealistic, and enjoy the confidence of their peers and of the community in general since they have received more education than the previous generations.

Outreach Training

Twenty-four senior students (grades 10-12) are selected from each of the farming districts in Sri Lanka. They receive training in how to use agrochemicals safely, and how to motivate farmers and their families to use them correctly. Besides technical training, students learn basic communication principles that will help them to organize seminars in the villages. The program is broken into three stages:

Stage I:	The entire training group attends an orientation comprised of lectures, demonstrations, discussions, slide shows, and films on the safe use of agrochemicals. To reinforce this knowledge, trainees are required to conduct a local survey on the use and misuse of agrochemicals they observed in their villages.
Stage II:	Groups of 50 to 60 students each next attend a two-day training workshop at an agricultural research institute where they receive further instruction in communication skills and other agriculture-related topics.
Stage III:	During this final stage, the trainees organize village-level seminars in their own communities. The trainees are expected to carry out the major portion of the planning and execution of this stage with some guidance from the committee members. These seminars provide a forum for farmers to discuss with resource persons the use and handling of agrochemicals.

The communication strategy for this project was based on recent research indicating that older farmers are coming to respect the newly acquired knowledge and skills of the younger generation as a result of their science-oriented school curricula. It was believed that directing messages through children would have a far greater impact on their elders and their home environment than that of occasional visits by agricultural extension officers.

The materials used for the project were planned and developed with the local population in mind – program instruction is given in Sinhala, one of the national languages, and examples most villagers are familiar with are used.

Media Used

There has been a continual updating of training materials and techniques, based on the feedback from pre- and post-training questionnaires. Over the course of five years, training has evolved into an intensive and practical experience. Throughout training, a wide range of media are used to support the regular lectures. Traditional lectures are generously illustrated with audiovisual aids: color slides, films, posters; field visits and practical demonstrations reinforce classroom training.

The subcommittee members who visited targeted villages during Stage III workshops observed that the communities showed a high degree of confidence in the trained students. Success of this program is measured by the number of activities generated by the information brought into the villages by the students. Farmers regularly participate in the village seminars, and there have been requests from other villages for similar training programs

Although it is difficult to assess the di
benefits of the program, there is a grow
awareness among farmers of the hazards
of the precautions needed when using ag
chemicals.This can be attributed at least in
to this information program.

The success of Sri Lanka's program mi
serve as a prototype to other Third W
countries where there are similar probl
with agrochemical poisoning. This low-
approach stands in clear contrast to o
more expensive mass media campaigns t
while covering more territory may be less
fective. Making this information available,
ticularly to farm populations, could mean
difference between life and death.

*Nimala R. Amarasuriya is the Project Coo
nator for the Programme on the Safe Use
Agrochemicals. She is Assistant Director of P
lications at the Natural Resources, Energy, a
Science Authority of Sri Lanka.*

Development Communication Report

1987 /2
No.57

Note to Uplink Readers

Since 1981, the Academy for Educational Development has periodically published the *Uplink* newsletter to keep interested observers informed of the AID Rural Satellite Program, and other activities related to telecommunications for rural development.

As described in this issue of *Development Communication Report (DCR)*, the Rural Satellite Program has completed its task of exploring and evaluating the applications of satellite technologies in the developing world. With the close of its Research and Development activities, so too does the AID Rural Satellite Program conclude the publication of *Uplink*.

In this issue, the AID-supported *DCR* continues reporting on telecommunications and development as part of its coverage of development communication applications, trends, and issues.

Uplink readers who wish to subscribe to *DCR* should contact the: Clearinghouse on Development Communication, 1255 23rd Street, N.W., Washington, D.C. 20037, U.S.A.

This issue of DCR introduces the results of an experimental program that has been carried out in three regions of the developing world over the last several years with the support of the U.S. Agency for International Development (AID).

The Rural Satellite Program (RSP) was established in 1980 to demonstrate that telecommunications are now capable of serving as a powerful new tool for rural development. Our supposition was that developments in satellite technology have made reliable telecommunications a practical possibility for the rural areas of many developing countries. If so, this new capability could be adapted to contribute to the fundamental work of development – in education, health, agriculture, and economic enterprise. We set out to test those assumptions.

One of AID's roles is to help craft, from advancements in science and technology, practical new development options. AID has therefore been assessing the implications of satellite communications from the time of NASA's Applications Technology Satellites (ATS) experiments in the early 1970s. In 1976, AID carried out the AIDSAT demonstration – a program that used transportable earth stations to link rural areas of 27 nations with their capital cities, and with the U.S. for teleconference dialogues on development.

From those experiences, the Rural Satellite Program was begun. RSP concentrated on exploring the practicality of two-way communications via telephone networking to reach rural populations, since satellite-assisted community television broadcasting had already been amply demonstrated.

We faced many questions. What applications make sense within the severe constraints of the rural developing world? Will users incorporate the new communications capability into their basic activities? Can end-user telecommunication technologies be made sufficiently reliable and convenient? Can technical and cost constraints be overcome, for example, through use of smaller satellite earth stations and through use of solar power to meet electrical requirements in the most remote areas? Can users – telecommunications authorities and planning ministries – devise ways to work together to plan and implement significant applications? Can the economics of rural telecommunications invest-

(Continued on page 2)

Forging a New Development Tool: Teleconferencing

by Karen Tietjen

The tremendous growth in worldwide telecommunications services in the last few decades has caused revolutionary changes in the conduct of business, banking, trade, and politics in both the domestic and the international arenas. The dozens of satellites orbiting the earth have created a worldwide communications system that truly makes the world a "global village" for those people with access to this system. The vast majority of the world's real villages, however, are generally cut off from domestic and international systems, not by choice but by circumstance.

Telecommunications services have been slow to reach into most rural areas of the world for several reasons: high costs, technical problems, and lack of a guaranteed return on investment. It is both cheaper and more profitable to develop telecommunications infrastructures for urban rather than rural areas. There is also the feeling among some planners that rural areas do not need or cannot really use telecommunications facilities and that the positive effects of providing such facilities do not justify the expense and effort. Some would say that basic telephone service cannot be provided until the users are able to pay for the costs. However, there is now a growing realization among experts that telecommunications is an essential ingredient that hastens development and is not merely a result of it.

A reliable telecommunications infrastructure can facilitate economic growth and promote national development aims. Telephone services to rural and remote areas can stimulate economic development and bring the rural resident closer to the mainstream of national life. There is also a growing feeling that access to communications facilities should be viewed as a social service to be provided by governments as they provide schools, and not merely looked at in terms of the bottom line of a balance sheet. As these realizations grow, an increasing number of developing nations are investing in satellite-based telecommunications systems. Within the last decade, Indonesia, India, Brazil, Mexico, China, and a coalition of 22 Arab nations have launched their own satellites. Through INTELSAT, 27 other developing countries have established domestic satellite-based communications systems. What was once regarded as the wave of the future is now a present-day reality. How can developing countries benefit from this "telecommunications revolution?"

In 1980 the U.S. Agency for International Development initiated the AID Rural Satellite

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Supported by the Bureau for Science and Technology of the U.S. Agency for International Development

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Development Communication Report, published quarterly by the Clearinghouse on Development Communication, has a circulation of over 6,000. The newsletter is available free of charge to readers in the developing world, and at a charge of US$10.00 per year to readers in the industrialized countries.

A center for materials and information on important applications of communication technology to development problems, the Clearinghouse is operated by the Academy for Educational Development, a nonprofit planning organization, and supported by the U.S. Agency for International Development, Bureau for Science and Technology, Office of Education, as part of its program in educational technology and development communication.

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Clearinghouse on
Development Communication

1255 23rd Street, N.W.
Washington, D.C. 20037 USA
Tel.(202)862-1900
Cable: ACADED
Telex: 197601 ACADED WASH

Judy Brace, Director
Kathleen Moran, Editor
Robert Vittel, Information Specialist
William Amt, Program Assistant
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ments be made more attractive by combining the benefits to social development programs with the revenues earned from rural telephony?

The guiding strategy has been to find applications where mainline rural telephone service could be adapted to the special needs of important development activities, in education and other sectors. The projects that evolved have all had a special focus on audioconferencing. Rural users everywhere told us that a primary need was to link dispersed groups of people, whether students or extension workers; audioconferencing can do that.

By collaborating with Indonesia, Peru, and six nations in the Caribbean, a great deal of experience has been generated and documented: the result has been a complex, often difficult, but in the end, gratifying undertaking. The systems, initially established as pilot projects, are now functioning as viable national enterprises with no external funding, and all of them are expanding. Data from Peru shows that rural telephones, taking advantage of satellite technology, are bringing in substantial revenues while providing irreplaceable services to rural development workers, businessmen, and families. In the Caribbean and Indonesia, thousands of students and extension workers are upgrading their training via audioconferencing. In a remote Indonesian community, solar power is driving a small satellite earth station, providing telephone service for the first time.

The results of the Rural Satellite Program have policy implications for three groups. For development planners, the results show that telecommunications can now be counted on to contribute to the primary work of rural development. For telecommunication providers, they have shown that by providing for the special needs of developing institutions, the case for national investment in telecommunications growth can be greatly enhanced: they have also confirmed the tremendous demand for and revenue flows from rural telephone services. And for the users themselves, the RSP results have shown how readily and economically they can use telecommunications in their day-to-day work.

These are but small portents of what is now possible. New INTELSAT services have reduced the cost of two-way satellite earth stations to the $50,000 range for rural, thin-route areas. With higher powered satellites, lower costs for earth stations can be anticipated. Such satellites already serve a total rural population in developing countries of well over a billion people. Other systems are being planned in Latin America and Africa. New technologies using microcomputers and "very small aperture" earth stations can provide electronic mail and data for $10,000 per earth station.

The Rural Satellite Program has shown us that its original assumptions were accurate. Satellites and other technologies are rapidly making the growth of rural telecommunications a reality. Rural telephone service is valued and readily paid for by users. With a small additional investment in equipment for audioconferencing, telecommunications systems can be made all the more useful to rural institutions, adding valuable capabilities for administration, education, and training. New technologies, and more important, new applications are rapidly emerging which are generating possibilities for development breakthroughs wherever information and communications are needed. We hope that the solid evidence from the Rural Satellite Program will contribute to a policy dialogue on these new possibilities—a dialogue that is based upon solid experience and upon the realities of the Third World.

Dr. Block, Project Manager of the Rural Satellite Program, is Associate Director for Educational Technologies and Communication, Office of Education, Bureau for Science and Technology, U.S. Agency for International Development.

On page 5 of *DCR* 1987/1, No. 56, we mistakenly referred to the person in the picture as a health worker. In fact, Ms. Kankakai is the Research and Evaluation Coordinator for the Liberian Rural Communications Network. We regret this error.

RSP Publications Available

The Rural Satellite Program (RSP) has written twelve monographs describing its activities in Indonesia, Peru, and the West Indies. ***Handbook for Planning Telecommunications Support Projects, Institutionalization of Three Telecommunications Development Projects,*** and ***Telecommunications for Higher Education*** are three of the 12 publications available upon request at prices ranging from US$3.50 to $12. A videotape overview of RSP is also available on loan in English, French, and Spanish. For a publications list please write to: RSP-AED, 1255 23rd Street, N.W., Washington, D.C., 20037 USA.

Continuing Education Conference

The American Association for Adult and Continuing Education will hold its annual conference October 19-24, 1987, in Washington, D.C. The conference theme, "Empowering the Adult Learner: A Global Challenge," indicates a focus that should be of particular interest to *DCR* readers. Sessions focusing on media as a tool for empowerment; empowering the agricultural worker; and international adult education are among the topics to be covered.

For more information, contact the American Association for Adult and Continuing Education (AAACE), 1201 16th Street, N.W., Suite 230, Washington, D.C. 20036. U.S.A. Telephone (202) 822-7866.

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(Tietjen *continued from page 1*)
Program to explore the potential of telecommunications to address basic development problems. Building on simple, interactive, and inexpensive telephone-based technologies, the Program developed teleconferencing systems as a means of extending scarce expert resources and expanding educational opportunities to remote and rural areas. Three pilot projects were implemented to test and demonstrate that teleconferencing could reliably and affordably support development efforts in education, health, and agriculture.

Six years later the three teleconferencing networks are in place and supporting development applications in Indonesia, the West Indies, and Peru. Personnel have been trained in their use, operation, and repair, and the networks are regularly used by their sponsoring institutions. Thousands of university students, teachers, agricultural extension agents, doctors, nurses, and rural health care workers participate each year in the programs delivered by the teleconferencing networks. With improved skills, greater knowledge and up-to-date information afforded by the teleconferences, they, in turn, are better prepared to serve the rural community.

The Technology

One of the goals of the Rural Satellite Program (RSP) is to use telecommunications to support and strengthen established public service systems, institutions, and organizations. Central to the RSP effort was the identification and adaptation of appropriate telecommunications technologies to specific applications and the Third World environment.

Telecommunications is imbued with a "high-tech" aura, which causes most development professionals to question its appropriateness in a development setting. Yet, at the heart of this space-age technology is a simple device which has been in use for over three-quarters of a century – the telephone. Furthermore, telephone systems are proliferating throughout the Third World.

Unlike radio and television, the telephone offers two-way communication. Interaction is central to coordination, information exchange, and instructional and training efforts. With the addition of special equipment, the telephone can be transformed into a teleconferencing network linking many groups of people at one time for multi-site, multi-participant meetings, conferences, and seminars. It facilitates dialogue, questions and answers, and immediate response. Teleconferencing can thus provide an effective means of training, institutional outreach, and administration.

Not unlike an ordinary telephone call, teleconferencing allows for spontaneity, immediacy, and a certain "intimacy." The end equipment – simple microphones and speakers – is easily operated by the participants themselves, and the presenter is not separated from his audience by the time between taping and broadcast. Participants must come to predetermined conference locations; active participation and interaction, teleconferencing's key assets, necessitate that the audience remain small. Thus, it cannot duplicate the sheer numerical outreach of the mass media, radio and television. *Where there is a need for immediate, interactive communication between specialized groups at multiple widespread locations, however, a telephone-based network can be invaluable.* It may actually be the only efficient and cost-effective means of carrying out some activities.

Telecommunications is imbued with a "high-tech" aura, which causes most development professionals to question its appropriateness in a development setting. Yet, at the heart of this space-age technology is a simple device which has been in use for over three-quarters of a century – the telephone. Furthermore, telephone systems are proliferating throughout the Third World.

The same teleconferencing technology was employed by each of the three pilot projects, with some variation necessitated by available transmission systems and user requirements. Basic to each project is a fully interactive, two-way, dedicated communication network linking several sites. Each site can initiate conferences and communicate with all other sites in the network. The networks use one or two telephone channels depending on the equipment comprising the "electronic classroom" at the project sites. The basic electronic classroom consists of audioconferencing equipment – loudspeakers, several microphones with push-to-talk buttons, and a network control terminal that controls signal levels and dialing functions when sites participate in a conference. Depending on the site, facilities and equipment can accommodate 50 to 100 people per site. In the Indonesia and West Indies Projects, additional equipment is included to provide a graphics capability. Telewriters and slow-scan video transmit images and pictures; microcomputers transmit text; and facsimile machines transmit "digitized" hard copy of text or pictures – all over a single telephone circuit.

The Applications

Interactive teleconferencing networks can be used for many purposes in diverse settings. The three RSP projects delivered information, multiplied scarce human resources, and extended institutional outreach in response to different development problems. In Indonesia, teleconferencing was used to meet the growing demand for higher education; in the West Indies, it proved the most effective means of reaching small numbers of people in isolated locations with quality instruction; and in Peru, it provided in-service training to field workers in health, education, and agriculture.

Indonesia

The Indonesian Distance Education Project (SISDIKSAT) was designed to maximize the scarce professional and teaching resources of the Eastern Islands Universities Association, a group of fairly new universities and teacher training colleges on the islands of Kalimantan, Sulawesi, Maluku, and Irian Jaya. Linking eleven distant and remote universities spanning 2,500 miles with a telephone-based electronic classroom, SISDIKSAT is used to provide rarely available academic courses to university students, upgrade faculty knowledge and teaching skills through in-service training programs and seminars, and facilitate administrative and institutional communication. Its effect is to make the expert resources of one university available to the other participating universities, thus multiplying each professional's outreach and effectiveness. Also included in the SISDIKSAT system are the Java-based Bogor Agricultural Institute – Indonesia's premier agricultural university – which serves as a center of excellence, and the Directorate General of Higher Education, which is the bureaucratic headquarters. SISDIKSAT's main activities are course sharing, seminars, audioconferences, training programs, message service, informa-

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tion exchange, and demonstrations which often include other user groups outside the university community.

In October 1984, SISDIKSAT initiated a trial semester offering two courses; it is currently completing its fifth semester with a regular schedule of 15 courses, reaching over 3,000 students each semester. To date, it has delivered 75 undergraduate courses, such as statistics, research methods, poultry production, and forestry. Use extends beyond normal course delivery to other activities. The Directorate General of Primary and Secondary Education is now launching in-service training for its teachers. A recent tribute to SISDIKSAT's importance to the professional community was a voluntary seminar program held over the semester break which attracted over 1,800 participants from both the university and the community at large.

West Indies

UWIDITE, the University of the West Indies Distance Teaching Experiment, links three campuses and three extramural centers in six different countries (Jamaica, Barbados, Trinidad, St. Lucia, Antigua, and Grenada) in a distance teaching program similar to SISDIKSAT. The first of the RSP projects to start operations, UWIDITE offered its inaugural teleconference in March 1983.

UWIDITE is characterized by a diversity of programs; while it is not used primarily for undergraduate instruction, its "Challenge Exam" program allows undergraduates in the non-campus territories to complete the first part of a Bachelor of Science degree without leaving their home island. In the 1984/85 academic year, nearly two hundred students sat for the Challenge exams.

UWIDITE places strong emphasis on its outreach and in-service training programs. The Certificate of Education program for primary and secondary school teachers provides opportunities for professional upgrading and, importantly, job advancement. This program has enabled the University to double its annual number of certificate awards. UWIDITE's health program is extensive: over 500 doctors and nurses are reached each year with in-service training in reproductive health and family planning. The Caribbean Food and Nutrition Institute presents a series of courses that cut across sectors: community workers in agriculture, education, health, and community development are trained to promote good nutrition practices in the community.

The UWIDITE network supports monthly consultations and case presentations and is used for special course series. For example, the PanAmerican Health Organization presented twelve sessions on emergency health management and the Caribbean Cardiology Conference, with 100 physicians in six countries, was conducted via teleconference.

Significantly, most of the UWIDITE program participants are between 31 and 35 years of age – a period when both family and career pressures would normally make it difficult to pursue additional training.

UWIDITE is particularly appreciated in the non-campus territories that lack the resources to strengthen their education and training systems. The availability of funds is one problem, but there are others: the limited size of certain demands in these small island nations diminish the economic viability of conventional training programs; the relative isolation makes it difficult to recruit and retain qualified staff; and the lack of access to new information serves to degrade the staff's effectiveness. These problems are addressed by UWIDITE, which has become a permanent feature of the University of the West Indies' offerings.

Peru

Can teleconferencing work outside the university classroom? The Peru Rural Communications Services Project (RCSP) works directly with rural field workers in the isolated "high jungle" region of San Martin. Based on the premise that basic telephone service is an effective means of overcoming infrastructure and resource limitations and constitutes an essential component of the development process, telephone service was provided to seven strategic rural communities ranging in size from 800 to 15,000 inhabitants, thus linking them with each other and with the rest of the country through the national telephone network. (See article on expanded Peruvian telephone service elsewhere in this issue.) Building on the basic telephone system, audioconferencing service was provided by ENTEL, the national telephone company, to the health, education, and agriculture ministries. By linking field and extension personnel with regional and central ministry headquarters, audioconferencing improves the operations and outreach of these centralized institutions.

The operations and development efforts of the social service sector in San Martin were severely handicapped by: inadequate access to information required to develop and provide effective services; lengthy delays in handling routine administrative matters; lack of staff supervision; and absence of in-service training programs for field workers.

The audioconferencing component was developed to support and strengthen these rural services. Audioconferencing (voice only) facilities were established at each site, either in the ENTEL office itself or in a central municipal building. Targeted users were the field staff of the health, agriculture, and education ministries, such as teachers, doctors, nurses, other health care workers, extension agents, etc. At each site, a representative from each sector was designated "local coordinator" to work with ENTEL in identifying sector needs and organizing appropriate programs.

Over a two-year period (1984-1985), 658 audioconferences were conducted – 266 in 1984 and 392 in 1985. Over 80 percent of the approximately 900 sector personnel in San Martin participated in the audioconferences. By 1985, average attendance had grown in every sector except agriculture; total enrollment including repeat users, was 10,000 person sessions. ENTEL itself discovered the utility of the audioconferencing network for training and management – it now accounts for a third of the network's use.

The audioconferencing network was primarily used for in-service training, with most programs originating from Lima, based on the participants strong preference for and belief in the superiority of Lima-based specialists.

The health sector was the most competent and innovative in its use of the audioconferencing network, reflecting perhaps greater congruence of its communication and information needs with the service provided by the RCSP.

To gain access to Lima-based specialists, an ongoing training program was developed with the *Colegio Médico* in four areas: internal medicine, pediatrics, gynecology and obstetrics, and primary health care. These conferences were well received by the participating doctors, nurses, nurses aides, and community health workers. Over a 10-month period, total attendance reached over 1,100. The RCSP network was also used to support the National Vaccination Campaign – for coordinating logistics, training workers, monitoring progress, and evaluating results.

The education sector conducted the greatest number of audioconferences. The network became the means of delivery for 32 workshops conducted by PROMULCAD, an innovative teacher training program. Special education was also a sector focus. A series of audioconferences were developed on learning disabilities. So successful were the programs that local parents asked to attend, and eventually, in an innovative mixed media event, audioconferences were broadcast live over the local radio station and questions were entertained through a "call-in" arrangement.

Because of strikes and poor leadership in the agricultural sector, it was least able to establish a viable audioconference program in San Martin. Only 88 audioconferences were completed in 1984 and 1985. Furthermore, the farm-visit strategy promoted by the ministry prevented extension workers from regularly attending audioconferences. However, in 1985 the new training orientation of the telecommunication project and revised scheduling for the agricultural telecommunication conferences helped to increase the number of successful audioconferences by 57 percent.

The Results

After four years of field experimentation, what has been learned? Although a proven technology and means of communication in the United States, teleconferencing was untried in the Third World. The RSP projects introduced teleconferencing to rural and remote environments, where the telephone had arrived only recently. In 1982 the questions were: Could the technology withstand the rigors of the environment, the deficit of resources, and the paucity of skilled telecommunications technicians? Could the technology be adequately transferred to ensure long-term operation and efficient use of the teleconferencing networks? Would it be an effective development tool? What were the most appropriate applications?

Teleconferencing technology can be made to work reliably in the developing world. In Indonesia, the 15-site audioconferencing network performs at 98 percent technical reliability; in the West Indies, the network successfully delivers all but 10 percent of its programs; in Peru, less than four percent of scheduled

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transmissions were cancelled because of technical problems. This high rate of reliability was accomplished by selecting simple and sturdy equipment, making certain equipment adaptations such as using noncorrosive metals, and creating innovative solutions – e.g. a noise "gating" system – when problems arise.

Training of local technicians in equipment maintenance, repair, and management is also a key factor in achieving a reliable teleconferencing network. Each technician received hands-on training, operations and maintenance manuals, and repeated refresher courses – taught over the networks, of course!

Yet, not everything was successful. The telewriters used for both the SISDIKSAT and UWIDITE Projects proved disappointing in their performance. And we learned that the human system was more liable to break down than the technical one. Both training and practice were needed before there was any certainty that participants and presenters would regularly attend the teleconferences, that materials would be prepared and presented on schedule, and that the telecommunications authority would not inexplicably turn off the earth station in the middle of a class.

Teleconferencing can answer development needs. It can support a variety of distance education programs, facilitate management practices, and fulfill essential information needs. As evidenced by the RSP pilot projects, teleconferencing is versatile: it is equally appropriate for delivering university courses, in-service training, health campaign coordination, medical consultation, and management conferences. It cuts across sector boundaries: university students and field workers, physicians and rural health care workers, teachers and agricultural extension agents can all benefit from teleconferencing. Training is by far the most demanded service of a teleconferencing network and will attract the most users. And training probably will have the most profound development impact of any of the teleconferencing programs.

Teleconferencing is an effective and popular means of instruction. Each project added sites and expanded classroom facilities to accommodate high attendance and demand. In Indonesia, it was not unusual for a site to have 100-200 students attend a single class. Special UWIDITE and RCSP programs often attracted large segments of the community, as well as the usual targeted participants. In the West Indies, over 500 doctors and nurses have participated in a single course series. In Peru, 80 percent of the field workers received training via the teleconferencing network.

Satisfaction with the communications medium – essentially two-way voice communications – was expressed by the users. In Indonesia, for example, 74 percent of the students indicated that they learned especially well from the interactive question and answer sessions, which were a regular feature of the SISDIKSAT courses. While 67 percent of the students felt they learned as much or more from the SISDIKSAT courses as from their face-to-face classes, 95 percent of their local tutors believed the students learned as much or more from the distance courses.

The Costs of a Teleconferencing Network

Three cost elements must be considered:

- capital costs: teleconferencing equipment, associated hardware and facilities;
- transmission costs: satellite "air time" and telephone lines;
- management and maintenance costs: operating the systems and developing programs for delivery.

CAPITAL AND RECURRING COSTS

COSTS ITEMS	SISDIKSAT	UWIDITE	RCSP
Audio equipment	$ 9,941/site	$ 4,985/site	$ 4,549/site
Annual transmission	237,500/year	104,000/year	no charge
Annual management	82,313/year	139,702/year	33,300/year
Hourly charge (transmission and management)	94/hour	140/hour	68/hour

COST EFFECTIVENESS: COMPARISON WITH FACE-TO-FACE DELIVERY METHODS

ACTIVITY	Face-to-Face	SISDIKSAT	UWIDITE	RCSP	SAVINGS
Course	$ 2,281/site	$542/site			58%
Seminar (1 day, 84 people)	11,250		$1,000		90%
Workshop (6 days, 20 people)	9,325	$3,384			64%
Training (31 sessions)	4,000			$2,600	35%
Teaching Certificate	8,172 student		$3,836		54%
Visiting Professor	64/course/ student	11/course/ student			83%

(Figures derived from Rural Satellite Project data in US$.)

Participants from all three projects found the teleconferencing programs relevant to their professional needs. The SISDIKSAT local tutors believed the distance courses and training sessions improved their ability to teach similar courses themselves.

In Peru, 92 percent of the participants stated the teleconferencing programs helped them do their jobs better. In fact, in 1985 over 300 teleconferences were organized at field workers' requests.

This demand is likewise evidenced when 99 percent of the SISDIKSAT seminar participants requested additional seminars. And in the West Indies, the University has decided that the UWIDITE "Challenge Exam" program is so successful that it will no longer offer face-to-face tutorials on the campuses.

Conclusion

Two-way, telephone-based communications networks can benefit rural institutions and users by providing access to expert resources, quality training, new technologies and methodologies, and scientific research, among other uses. They provide a means of communication with policymakers, a chance to ask questions and discuss problems, and an opportunity to participate in the decision-making process.

The ultimate outcome of the Rural Satellite Program is that the experience and knowledge now exist to provide a sound foundation for others interested in establishing innovative uses of telecommunications. It signals the beginning of a global effort to bring education, training, and information to more and more people at lower costs. It is hoped that, based on the experience of the Rural Satellite Program, others might benefit from its triumphs and pitfalls to more effectively design and implement similar projects in the future. ■

Karen Tietjen is Project Director of the Rural Satellite Project, which is operated by the Academy for Educational Development.

Telephone Service Expands in Peru

by Gary Heald, Steven Klees, and John Mayo

In 1984, the Independent Commission for World-wide Telecommunications Development (popularly known as the Maitland Commission after its chairman, Sir Donald Maitland) summarized the importance of telephony to rural development. It concluded that "telecommunications should be regarded as a complement to other investments . . . an essential component in the development process which can raise productivity and efficiency in other sectors, and enhance the quality of life in the developing world." Evidence from a variety of two-way systems in Alaska, Canada, India, Thailand, and Indonesia confirm this observation.

There are still many unknowns, however, concerning the use, costs, financing, and impact of rural telephone systems. While national planners and their colleagues in international agencies are familiar with the economic and social benefits associated with investments in transportation, education, health, and agriculture, they still lack the information, familiarity, and confidence to judge the benefits derived from telecommunications. To address such issues, a number of important pilot projects have been undertaken in recent years. One such initiative was the Peruvian Rural Communication Service Project (RCSP).

> *"...there was an immediate demand and a sizable market for public telephone services."*

System Operations

The RCSP was developed by the Peruvian government and the U.S. Agency for International Development to determine among other things, whether a satellite-based telephone communication system, linking a variety of agencies and technologies, could provide a useful, reliable, and cost-effective service to a remote region of eastern Peru. The project incorporated numerous technical, programmatic, and administrative innovations. The relatively small 6.1 meter antennas received and transmitted signals using the hemispheric beams provided through INTELSAT satellites. These earth stations were linked to radiotelephones to extend rural telephone coverage to the smaller villages in the project.

The pilot project was concentrated in seven rural communities in the Department of San Martin, a high jungle area east of the Andes. The three largest communities, with average populations of 12,000, were connected via satellite to Peru's national telephone system. The remaining four towns, with average populations of 3,400, were linked by means of VHF radiotelephones to one of the earth stations and then to the national network.

All RCSP sites, designed to provide commercial telephone service at public call offices, were staffed by ENTEL (*National Telecomunications*) personnel or by local *concessionaires*. After a lengthy network design and installation process, public telephone service was inaugurated at the seven sites between July 1983 and June 1984. In addition to standard two-way telephone communication, the RCSP incorporated a message delivery system which allows users to pre-arrange both outgoing and incoming calls at public call offices. When a telephone message arrives in a community, ENTEL delivers it to the recipient's home or office – an important service, as most Peruvians do not have private telephones.

During the first two and one-half years of commercial RCSP service, 87 to 95 percent of the calls were made from the participating rural communities. Telephone traffic increased from 22,170 calls in 1983 to 102,895 in 1985. Unquestionably, there was an immediate demand and a sizable market for public telephone services. In 1985, 87 percent of annual operating costs were covered by RCSP revenues.

In-depth personal interviews with public telephone system users revealed that the frequent system user (4 to 5 calls per month) was typically male, 33-35 years of age, born outside of the project zone, and was well educated by regional standards. Approximately 24 percent of the system users held professional or technical positions. Use among business owners and managers grew appreciably during this period – from 14 percent in 1983 to 34 percent by the end of 1985.

System Reliability

The novelty of the system, the challenges from adding new network sites, and the skyrocketing use of telephone services, did not compromise the system's reliability; during the first six months, fully 81 percent of all initiated public calls were successfully completed. This completion rate declined slightly over time, and held steady at about 75 percent during the next two years. Calls lasted an average of approximately six minutes, and overall, the average waiting time for a call to go through was 51 minutes. Following its inauguration in mid-1983, all or part of the RCSP system operated 174 out of 184 possible days; and in 1984 and 1985, the earth station was operational every day.

It is difficult to identify many of the benefits derived from having nearby telephone service. Nevertheless, several key facts demonstrate the value rural Peruvian users place on improved telecommunication services and how their lives have changed as a result. First, surveys showed that among families using the system at least once, average monthly incomes ranged from $68 to $150. A single long distance call averaged $1.15, representing about 0.6 percent of families' monthly incomes among regular users, and between 0.8 and 1.7 percent of average family incomes. That rural families chose to allocate their limited discretionary income to telephone use is one measure of the value of telephone communications to individual users.

Secondly, despite the additional expense that would be incurred, there was a strong demand for private telephones as well, and a number were installed in homes and offices in the three sites served by satellite earth stations. In 1984, 28,790 calls were initiated from these private phones, and 50,767 were made in 1985.

(*Continued on page 12*)

SIDAIDSIDA
HIV

This article considers the medical and social implications of HIV and AIDS rather than addressing our usual topic – communication. Due to the increasing need to understand HIV, and the widespread misunderstandings about this virus, we feel it is both appropriate and important to include Dr. Mann's piece along with those that describe communication strategies and lessons learned from HIV and AIDS education efforts in the U.S. and in the developing world.

AIDS: The Global Challenge

by Dr. Jonathan Mann

The worldwide epidemic of Human Immunodeficiency Virus (HIV) infection, including the Acquired Immunodeficiency Syndrome (AIDS – SIDA in French and Spanish) represents an unprecedented and urgent challenge to international public health. AIDS is not "somebody else's" problem – it is an international health problem of extraordinary scope affecting both industrialized and developing countries, and will require a long-term effort and commitment on the part of the entire world.

AIDS emerged quickly and many wish it would disappear just as quickly. But it is unlikely that a vaccine or a widely effective therapy will become available for at least several years. Even if a vaccine were distributed tomorrow, AIDS cases would continue to appear for generations, coming from the pool of people already infected. The only deterrent we have at the present time is *education*.

The pandemic was a silent one at the beginning, from the early 1970s until the mid 1980s. Then, when it was positively identified and the lethal nature of the virus become well known, its presence "exploded" onto the international scene. Now, we are witnessing an astonishingly diverse range of impacts and reactions to the HIV phenomenon – psychological, social, cultural, economic, and political.

With the establishment of the Special Programme on AIDS (SPA), the World Health Organization (WHO) recognized the immense dimensions of this threat to global health. WHO acknowledges its responsibility to rapidly mobilize national and international energies, creativity, and resources for global AIDS prevention and control.

Transmission Modes

The transmission modes of HIV have become clearer over time and with the growing availability of epidemiological studies throughout the world. HIV appears to be spread in only three ways – sexually, through blood, and from mother to child. Sexual transmission transcends national, racial, geographic, cultural, and social boundaries. HIV can be spread sexually from man to woman, woman to man, woman to woman, or man to man.

Transmission through blood can occur in several ways. The most common is through HIV-contaminated blood transfusions. Fortunately, this can be prevented by screening the blood for the virus. A second route is through certain blood products, such as those used for hemophilia patients, that were contaminated with HIV. This problem also can be controlled through screening and with special treatment of the blood product. Finally, intravenous drug users who use blood-contaminated needles, syringes, or other equipment also risk contracting HIV. Similarly, any needle or other instrument contaminated with blood and then used on another person, could transmit HIV. Transmission can be controlled if instruments are cleaned and sterilized between each use.

Transmission of HIV from an infected mother to her child (perinatally), reflecting a special biological relationship, can occur before, during, or shortly after birth. The efficiency of this type of transmission is approximately 50 percent. Studies are in progress to better define this risk.

There is no evidence to support casual transmission, i.e. the spread of HIV by insects of any kind, through food, water, air, or via swimming pools or toilets. Transmission requires specific human acts or special relationships, such as that between a mother and her child.

The Numbers

The numbers of reported cases of AIDS and of countries identifying AIDS cases have increased dramatically. As of May 6, 1987, 105 countries have reported 49,132 AIDS cases to WHO. This number, however, represents only a portion of the estimated total, believed to exceed 100,000. Between 5 and 10 million persons may currently be infected with HIV, and by 1991, at least one million AIDS cases will have occurred worldwide according to WHO estimates.

(*Continued on page 8*)

HIV and AIDS Explained

AIDS (Acquired Immunodeficiency Deficiency Syndrome) is the most serious – but not the only – illness caused by the Human Immunodeficiency Virus (HIV). AIDS is a fatal virus-caused disease, characterized by a weakening of the immune system which permits infection by opportunistic diseases. In fact, like most viruses, HIV appears to cause a spectrum of illness, ranging from infection with no symptoms to malaise to chronically swollen lymph nodes and other conditions known as AIDS-Related Complex (ARC), to diagnosed AIDS itself. What is being transmitted between people is not a single disease, then, but a virus that causes various degrees of disease.

It is important to understand that a minority of those infected with HIV may never become ill; that infection alone does not automatically mean disease; and that there is no necessarily direct progression from infection to ARC to AIDS. Perhaps as many as 80 percent of those infected will, however, suffer *some* HIV-related illness such as AIDS, ARC, brain and nerve damage, or various cancers. The longer a person is infected, the greater the chances appear to be of developing illness, particularly AIDS.

On the other hand, *infected individuals are at all times infectious*, presumably for life, whether or not they become ill. In this respect, HIV is unlike other viral infections and raises issues of profound importance regarding prevention, treatment, and control.

Moreover, HIV infection and its various disease manifestations vary considerably in different parts of the world. What is happening in Western Europe or the United States cannot necessarily be explained by what is happening at the same time in central Africa, or vice versa. Perhaps more than one virus is at work, or sociomedical conditions encourage certain kinds of infections but not others, or some other unknown factor is at work that makes this infection so markedly dissimilar from country to country. For some time to come, what is known about HIV infection will be hostage to what we have yet to discover about it.

For the time being, however, the numbers alone are staggering. Perhaps as many as ten million people are HIV-infected worldwide, and that total increases as this is written. Even if no further viral transmission occurs anywhere in the world, the community of nations will be coping well into the next century with as many as five million of those already infected as they develop some HIV-related illness. ■

(**Mann** *continued from page 7*)

Furthermore, AIDS is threatening projected health gains for the developing world. For example, in areas where 10 percent of the pregnant women are HIV infected, the infant mortality rate due to AIDS alone may be 10 to 20 per 1000 births. This HIV-related increase in infant mortality may cancel out projected improvements in infant survival rates attributable to child survival initiatives.

In North and South America, Europe, and Australia, most AIDS cases occur among 20- to 49-year-old homosexual or bisexual men and among intravenous drug users. However, an estimate of the proportion of cases of AIDS acquired through heterosexual contact in these regions has increased from one percent to approximately four percent. The United States Public Health Service has estimated that by 1991, 270,000 cases of AIDS will have occurred in the USA - more than eight times the approximately 35,000 cases of AIDS identified since the beginning of the epidemic.

The number of African countries reporting cases of AIDS to WHO has increased substantially in the past year. HIV is transmitted in Africa as it is elsewhere in the world. While an accurate accounting of HIV-infected persons or AIDS cases in Africa is not available, it is likely that Africa has at least one million infected people.

Relatively few AIDS cases have been reported in Asia, and most of those have been associated with exposure to contaminated blood products or to persons from Western countries. Though there is evidence of local HIV transmission, studies suggest that it has not yet penetrated the general population.

Earlier estimates of the rates of progression of HIV infection to AIDS and other AIDS-related syndromes have recently been revised upward. On the basis of current information, it appears that 10 to 30 percent of HIV-infected persons will develop AIDS and that 25 to 50 percent more will develop AIDS-related illnesses during a five-year period. Current data suggest that the majority of HIV-infected persons may develop AIDS during the first ten years after HIV infection and that the remainder may have AIDS-related illnesses.

The Costs

In industrialized countries, the economic impact of AIDS will be substantial: consider the estimated per patient cost of $50,000 to $150,000 for direct medical care. In comparison, the cost of preventing AIDS is quite small. For example, several health educators could be employed for a year for the cost of treating a single AIDS patient. Indeed, the entire 1987 WHO budget for AIDS does not exceed the medical care costs incurred by less than one percent of reported AIDS cases.

The social impact of HIV-related diseases is occuring at all levels – personal, family, and community. HIV-infected persons, including AIDS victims, are being expelled from their families or their social milieu at the very time they most need support and care.

HIV infections and AIDS strike most often at the 20- to 49-year-old population, in contrast to many health problems that affect either the very young or the older segments of society. Thus it robs societies of people who are in their most productive years, creating a serious threat to countrys' social and economic development.

The Challenge

The HIV and AIDS epidemics are truly global problems, affecting industrialized and developing nations alike. A "business as usual" approach will not suffice. The WHO strategy for AIDS control is to stop the spread of HIV worldwide by attacking *every* mode of transmission in *every* country, using *every* educational technique available. This daunting task will require an unprecendented level of commitment from all governments as well as from medical and public health professionals.

Education is our only tool so we *must* make it work. That will require all the clarity, all the hard work and all the creativity we can muster to make certain that it does work. ▪

Dr. Jonathan Mann is Director of the Special Programme on AIDS at the World Health Organization in Geneva, Switzerland.

An AIDS Campaign in Brazil

by Douglas Janoff

Most people like to get away from problems and concerns when they go on vacation. It is probably safe to say that a majority of vacationers would not want to be reminded about the growing problem of AIDS as they travel to long-planned getaways. But tourists arriving in Rio de Janeiro and other cities in Brazil for the annual Carnival celebration last February were in for a surprise when they passed through customs and uniformed policemen handed them the following brochure in Portugese, Spanish, English, and French:

> *"Dear Tourist, Welcome to Brazil*
>
> *We hope that your stay in our country will be the most pleasant possible and that you will enjoy it. One of the most popular events, the Carnival, is taking place now and is a period of great fraternization.*
>
> *Brazil has one of the largest number of registered cases of AIDS in the world. This situation must be faced even during such a pleasant occasion as the Carnival. Therefore, for your health and safety, try to avoid casual or multiple sexual contacts. With any kind of sexual activity, use condoms, which can easily be found in drugstores.*
>
> *If you need to use syringes, use only one-way models, and make sure they are disposed of after use.*
>
> *Collaborate with the health authorities to preserve your health and that of the Brazilian people."*

The AIDS brochure distribution program was spearheaded by the National Division of Sanitary Surveillance in Ports, Airports, and Borders. According to Dr. William Waissman, Assistant Director of the Sanitary Control Service for Immigrants, 500,000 brochures were handed to in-coming visitors during Carnival week – half in Rio de Janeiro and half in other popular destinations such as Recife and Porto Alegre.

At the time of the 1987 Carnival, there were already 1,263 confirmed cases of AIDS in the country. A year earlier, AIDS was rarely discussed; but awareness and concern about the virus has changed considerably in the past year. At first, other government agencies resisted becoming involved in disseminating information about AIDS. For instance, in 1986, when Waissman's service prepared and began to distribute a questionnaire to passengers arriving in Brazil, they had to stop because of protests from airline companies and the press. But in November of that same year, the government announced plans for a massive education campaign to prevent the transmission of HIV/Aids in Brazil. And, by February 1987, the climate was favorable enough to run a coordinated information campaign during the Carnival celebration.

Beyond reaching the tourist populations, it is particularly important to reach large portions of the Brazilian population. Planners of the national AIDS campaign intend to use television, radio, and all major newspapers in their effort to cover the country. Initial TV coverage is comprised of short informational messages directed at high-risk groups. Although a coordinated mass media campaign has not yet been launched, there are plans to use radio and the print media as well to reach a wider audience.

A Matter of Funds

Dr. Alvaro Matida, director of the Infectious Diseases Department for the State of Rio de Janeiro, estimates that US$6 million will be needed to adequately meet the costs of AIDS prevention and medical care. However, because of extreme budget constraints, only $45,000 has been earmarked for ongoing AIDS activities at this time.

While articles reporting on the AIDS problem appear regularly in newspapers, advertisements that would better educate readers about the virus have not been published.

Brazilians are slowly becoming more aware of this latest threat to their health, and the Brazilian government has shown a willingness to inform its citizens about its dangers, but until more funds are designated to implement educational programs, progress will be slow in developing strategies against the spread of the virus. ▪

Douglas Janoff is a Canadian journalist who is currently in Brazil on a grant from the International Development Research Centre in Ottawa, Canada.

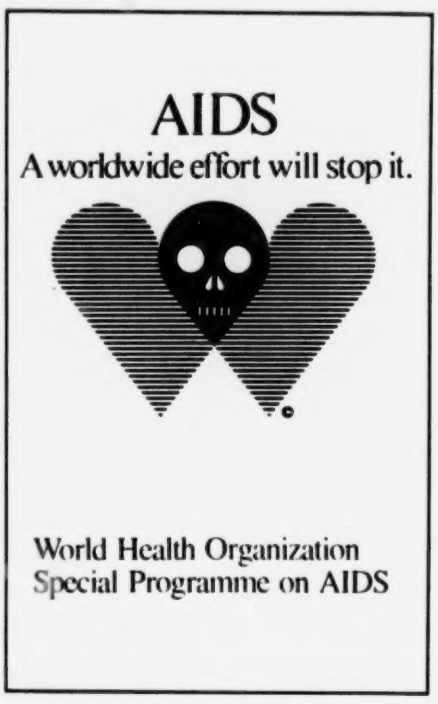
AIDS Public Health Communication: A New Challenge for Communicators

by Anthony Meyer

Over the past several decades, communicators have gained valuable experience which can contribute to the control of AIDS. Health education and communication programs have become increasingly effective, particularly in promoting family planning, immunizations, oral rehydration therapy, improved nutrition, and a variety of child survival practices. Programs are better today because increasingly:

- multiple channels of communication, including institutions, are mobilized to reinforce messages and activities from a single program perspective;
- information about specific behavior and its cultural and social context guides the communication strategy and message development process;
- formative evaluation and on-going monitoring improve program performance; and
- the power of face-to-face communication and traditional networks of training and communication are combined with the coverage, convenience, and reinforcement of mass media.

AIDS prevention and control must go beyond everything that has been achieved in the best of programs. The subject matter is sensitive; AIDS is itself often a political issue; and the behavior to be changed is deeply rooted. AIDS is also a global problem, requiring appropriate knowledge and targeted behavior change throughout the entire adult population of the world. Fear, denial, and blame must be replaced by constructive personal and communal action – worldwide. Combating AIDS requires that every lesson of the past be adapted, every channel of communication be appropriately employed and every strategic insight be integrated into public health communication efforts to combat AIDS. Education and communication are our only vaccine against AIDS.


AIDS
A worldwide effort will stop it.
World Health Organization
Special Programme on AIDS

> *"The global need to stop AIDS represents a call to action for every professional communicator."*

There is cause to hope that communication-related disciplines have evolved in both depth and perspective to a point where communicators can collectively assist in meeting this challenge. Audiovisual specialists, at one time, were expected to produce a poster, flyer, or newsletter with little regard for program context or planned, cumulative impact over time. Targeted behavior change was not typically an expected outcome. Communicators now play a more significant role from the beginning of projects in overall planning. They share in the responsibility for program impact.

Health educators were often expected to generate widespread public health impact while having the capacity to infrequently contact only a fraction of the target audience. Contact was often restricted to those visiting clinics for treatment, and outreach for prevention was typically limited to small groups of participants. Communicators now have learned to use electronic media and national newspapers to help set a public agenda for change. Increasingly, their efforts are coordinated into system-wide outreach efforts which attempt to mobilize adequate resources for specific health care objectives.

In the past, health promoters used advertising and campaign approaches to change practices, but often failed to promote social maintenance of the changes that were introduced. More recently, social marketing has attempted to apply marketing methods to promote change. Needs assessment and target audience analysis have improved as well, bringing communicators closer than ever to community perspectives and to traditional networks to support change.

All communicators, regardless of initial professional orientation, have been influenced increasingly by the social sciences. Social psychology, communication research, and marketing have enhanced research in audience definition, channel characteristics, and the use of field data to test assumptions underlying strategy, message, and materials development.

Anthropology has provided tools for developing more creative concepts and culturally appropriate content. Behavioral psychology has added precision in facilitating behavior change through examining the antecedents and consequences (costs and benefits) of specific behavior.

In summary, the community of communicators working in the health sector has evolved beyond a simple paradigm. The term public health communication has been introduced to capture something of this evolution. Public health communication is broadly defined as the systematic attempt to influence specific health practices of large populations positively, using principles and methods of mass communication, instructional design, health education, social marketing, behavioral analysis, anthropology, and related public health and social sciences. The term implies reliance on multiple channels, coordinated to introduce sustained change in specific practices crucial to achieving a public health impact. It is a term that seems to be appropriate in describing what is required to stop AIDS.

The global need to stop AIDS represents a call to action for every professional communicator. The range of possible action is wide. The World Health Organization (WHO) is coordinating worldwide action and is facilitating the formation of national AIDS prevention and control committees and plans of action in countries which request their assistance. Major international organizations – AID, UNDP, UNICEF, Unesco, UNFPA, The World Bank, The Red Cross, major foundations – and thousands of local institutions are developing their own complementary action plans. Each will have a significant public health communication component. Each will require services that you as communicators are best suited to offer. ▫

Dr. Meyer is Development Communication Specialist in the Office of Education, Bureau for Science and Technology, U.S. Agency for International Development (AID), and plans to join the WHO Special Programme on AIDS in Geneva, Switzerland, on loan from AID.

(The opinions expressed in this article do not represent the policy or position of AID.)

Marketing A Dietary Plan for Diarrhea

by Cecilia Cabanero Verzosa

The introduction of new products in the commercial sector is time-consuming, expensive, and difficult. A study by Booz, Allen and Hamilton (an advertising marketing firm) found in 1968 of 58 product concepts that were considered, only one reached the marketing stage. Fourteen years later, they noted that seven new ideas were considered for each product that reached the commercial market.

If product introduction is difficult in the commercial sector, it becomes even more difficult in the public sector which must appeal to low-income markets. These consumers have little to spend on discretionary items, are not well educated, and are geographically less accessible than are other consumers.

Successful social marketing, the marketing of socially beneficial products, concepts, or behaviors, depends on an understanding of and access to this low-income market. The Dietary Management of Diarrhea (DMD) is an ongoing nutrition project that is evaluating the current dietary practices during and after diarrhea episodes in young children in Peru and Nigeria. It also promotes nutritionally optimal dietary regimens among mothers and is using the concept of social marketing to design this communication campaign. The project is funded by the U.S. Agency for International Development and is managed by The Johns Hopkins University.

A Framework

Private sector marketing techniques are used to provide a relevant framework for social marketing efforts. Using the four P's of marketing – product, price, place, and promotion – the marketer defines the product, determines its market price, where to place it in the market, and what promotional efforts to use in order to reach the targeted consumers.

In designing the communications and marketing strategies one needs to find answers to the following questions:

1. *Who is our target?*

Low income groups can be divided into urban and rural segments. Differences exist between these two segments that may affect their ability to comprehend the relationship between nutrition and diarrhea, or their willingness to change dietary practices.

A question commonly asked in public sector health programs is, "Who is in need of better nutrition, potable water, family planning services, and immunizations?" Although the answer seems obvious from an epidemiological point of view, the communicator must ask another question, "Who are most ready to change their health behavior?" Public sector health programs often underestimate the need for sustained targeted communication efforts to effect some measurable health behavior change among a group of people.

The DMD project in the Department of Ancash in the central mountain range of Peru has identified 27,405 households with children under three years of age as its target audience. Fifty-seven percent of these households are urban and forty-three percent are in rural areas. Available foods differ between the urban and rural areas and this is reflected in the different diets of children in these households.

2. *What is the DMD product?*

The term "product" is broadly defined to include a concept, a practice or behavior, or a tangible product.

One of the DMD "products" being considered is a blend of pea and wheat flour – two flours that are not traditionally blended in the same recipe but which together form a nutritious combination. One of the objectives of the project is to encourage mothers to use ingredients commonly available in the home to prepare nutritious food for their children. But teaching mothers new recipes is easier said than done. Mothers in rural areas tend to be more traditional and conservative than mothers in urban areas. They value traditional foods and prepare them in traditional ways. Because the concept of blending the two flours is new to them, it is only after they actually cook and eat a dish containing the combined flours that they acknowledge the two ingredients can be combined successfully A prepackaged product ready to use would be very convenient for mothers, but the low-income sector could not afford such a product even if it were available. The project, therefore, encourages the use of home-available ingredients and the preparation of the food in the home.

The DMD "product" may be defined both in terms of a concept and of the tangible item. The concept to be promoted among mothers is the continued feeding of high-nutrient density foods during and after diarrhea to offset the nutritional losses of diarrhea, especially in poorly nourished children. One must be careful to position the "product" in mothers' minds so it meets a perceived need. Mothers may perceive that their problem is a child who has lost its appetite during diarrhea and she should respond by preparing a light liquid diet. If the product being offered has a thick consistency, mothers may resist using it. On the other hand, the problem as perceived by the nutritionist is the low nutrient density of foods given to the child that can be corrected by introducing foods with thicker consistency! The question to ask is: "Whose problem are we trying to solve?"

The tangible product developed to educate mothers about the need to feed high-nutrient density foods to their child with diarrhea may be a recipe booklet or a recipe calendar that gives information about appropriate foods to buy and how to prepare them.

3. *What price are mothers willing to pay?*

The price factor takes into consideration the cost of the ingredients and cooking fuel; the time needed to procure these items; the time and human energy needed to cook the recipe; and the effort needed to frequently feed the child. A mother must determine whether her investment in time, energy, and money gives her adequate psychological rewards in knowing she is doing something to help her child survive a bout of diarrhea. However, when the price is too high, or the rewards too small, it may be difficult to sustain a new behavior.

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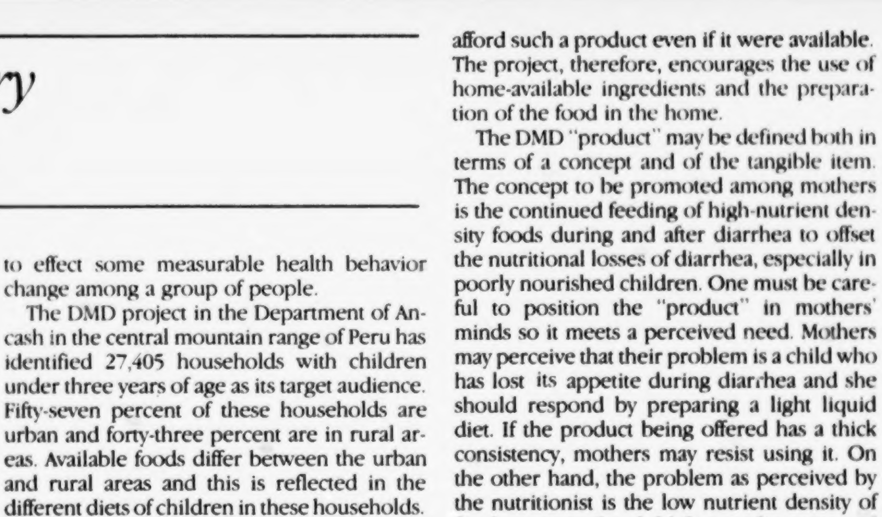


A mother feeds her child a dish prepared with pea and wheat flour during recipe trials in Peru. (Photo provided by the International Development Research Council of Canada.)

Knowledge About AIDS in a Central African Town

by M. Carael, J. Nkurunziza,
and C. Almedal

In Africa, the impact of AIDS is already wide and deep and is leading to extensive changes in sexual behavior. With education as the only effective antidote to the spread of this disease, African nations are beginning to plan and implement information campaigns targeting high risk groups. One such effort is currently underway in Rwanda where, in 1986, the first national radio information campaign and follow-up survey on AIDS knowledge levels was authorized by the government.

In July 1986, the Rwandan Red Cross was asked by the country's Ministry of Health to develop and conduct a two-year AIDS education program. Funds for this effort were provided by the Norwegian Red Cross.

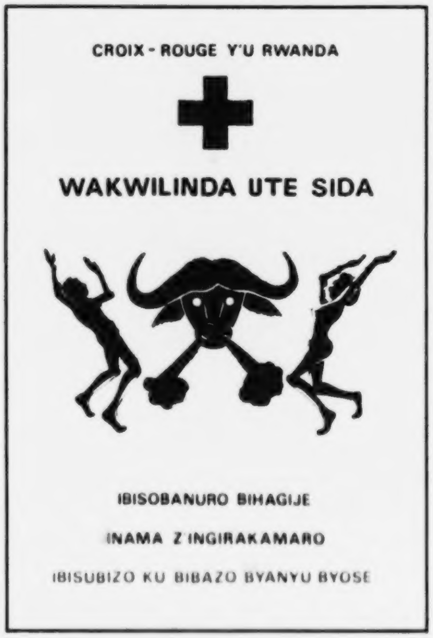
A Radio Campaign

The short daily radio spots and six one-hour programs were produced and broadcast for six months on Rwandan national radio. This campaign had a major impact on the level of knowledge of AIDS among urban adults. Post-broadcast research showed an increased understanding of the HIV modes of transmission among those with higher levels of education. At least 25% of these adults reported they have changed their sexual behavior in the past year. Sexual abstinence was the most common preventive measure adopted by this group.

What People Learned

In order to develop an effective information strategy, the Red Cross conducted a survey in Kigali, the capital of Rwanda, a city of approximately 400,000. During a two-week period, 1192 men and women between the ages of 18 and 50 were interviewed using a standardized questionnaire. The great majority of respondents (98%) knew that AIDS is a disease and 76% knew that it is caused by a microbe. A majority of them (73%) learned about AIDS by listening to radio, 14% learned of it from friends, and smaller percentages from newspapers, health workers, and from others. While 57% of those questioned were able to report one symptom of AIDS, and 23% could identify two symptoms, 14% knew none of the correct signs or symptoms of the disease.

Fully 73% knew that somebody could be infected with the virus without showing any signs of the disease. Awareness of how HIV is transmitted is of particular interest in terms of health behavior. Ninety-seven percent of adults in urban areas knew that AIDS is spread by sexual contact, and 92% by transfusion of blood. However, 65% of the respondents believed that AIDS is spread by mosquito bites and public toilets. Forty-seven percent also believed that they can catch AIDS by drinking from the same glass or breathing the same air as an AIDS victim. Not surprisingly, 41% of the respondents believed that AIDS cannot be prevented – women more so than men (56% versus 36%.)



CROIX - ROUGE Y'U RWANDA

WAKWILINDA UTE SIDA

IBISOBANURO BIHAGIJE

INAMA Z INGIRAKAMARO

IBISUBIZO KU BIBAZO BYANYU BYOSE

Among those believing that AIDS infection could be avoided, 57% reported they have changed their behavior in the past year. Among this population, nearly 67% of the men said they avoided prostitutes and occasional sexual partners, and 71% of the women said they reduced their number of male partners or abstained from sex. Unfortunately, none of these respondents reported using condoms during sexual intercourse.

Following the radio program and assessment of the survey data, a 30-page information booklet was prepared using a question and answer format. (See illustration) Copies were prepared in Kinyarwanda, the national language and in French. During this on-going two-year public education campaign, the Rwandan Red Cross will distribute 25,000 booklets to opinion leaders throughout the country. Three thousand copies of a more scientific document were prepared for paramedical personnel. Leaflets will also be produced targeting identified high risk groups such as prostitutes, chauffeurs, soldiers, and students.

The Rwandan Red Cross will be a primary distributor of the booklets, given their local committee structure in communities throughout the country. To them falls the responsibility of transferring accurate information via interpersonal communication. This will not be an easy task as sexual behavior and practices are seldom discussed in public; prostitution is tolerated in urban areas; and the use of condoms is resisted.

In Rwanda, as in the rest of Africa, profound alterations will have to occur in social relationships if the spread of the virus is to be controlled. The role of education in provoking this change in awareness and behavior cannot be overemphasized given the magnitude of the HIV epidemic. ▪

Michel Carael works for the Institute for Sociology in Brussels, Belgium and assisted in gathering data for the Rwandan Red Cross for their AIDS campaign; Dr. J. Nkurunziza is associated with the Rwandan Red Cross; and Calle Almedal is with the Norwegian Red Cross in Oslo, Norway.

(MacDonald continued from page 11)

true risk, and wants basic information. 4) Acceptance: in which the public acknowledges, however grudgingly, a deadly threat in its midst and wants to do something about it.

3. Finally, effective programs do not simply convey information. They also enable people to change behavior and maintain those changes over time.

People may be persuaded eventually that HIV infection can happen to them under certain circumstances. They may even be convinced that there are things they can do to prevent infection. As difficult as these objectives are to achieve, they are only the beginning. It is essential to follow-up these first steps with programs and services designed to help people change their behavior, and to maintain those changes over time. Only if knowledge can be translated effectively into action will HIV infection be stopped. Ultimately, what people will probably need is a "reward" in the form of social affirmation for the changes they must sustain for the rest of their lives.

U.S. experience with HIV prevention to date suggests that effective programs are a process that is best carried out with consensus support at the community level in ways that are sensitive to varying degrees of awareness; acknowledge the need for accurate, clear, and consistent prevention messages; and enable people to make and sustain beneficial behavior changes over time. ▪

Gary MacDonald is a Senior Technical Advisor on AIDS to the Academy for Educational Development.

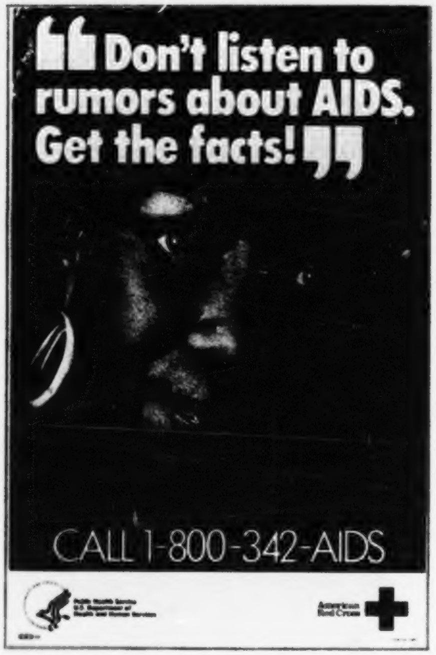
HIV Prevention Education in the United States

(While the DCR usually focuses upon communication issues related to developing countries, on occasion we find it appropriate to turn to developed countries for applications that may help practitioners who are looking for guidance but are finding few appropriate examples. In this case, we look to the United States where there are a growing number of campaigns devoted to informing target populations about AIDS and the HIV virus.)

by Gary MacDonald

Because infection with Human Immunodeficiency Virus (HIV) is lifelong, the behavior changes that protect against its spread must also be maintained for life. That necessity alone places HIV infection well outside the disease status quo, and suggests to many U.S. experts that HIV prevention programs must be as unusual – and as clever – as the deadly new microbe they are designed to contain.

In the U.S., the decentralization of the official public health system has had the unwitting but beneficial effect of encouraging innovation in HIV prevention programs. Though the lack of a central official source for program development has forced private organizations throughout the country to finance and implement prevention programs on their own, the same groups have nevertheless taken advantage of their freedom from official constraints to experiment with new, and in many cases extraordinary, means of preventing HIV transmission.


Don't listen to rumors about AIDS. Get the facts!
CALL 1-800-342-AIDS
Public Health Service
U.S. Department of Health and Human Services
American Red Cross

FAMOUS ROLE MODEL: singer Patti LaBelle cautions Blacks to ignore false information about AIDS. Note national hotline phone number on all posters, with blank space at bottom to add local names and numbers for more information.

Experience to date strongly suggests that these programs work best when they are designed and carried out by and within the actual communities for which they are intended. What works in New York does not necessarily work in Los Angeles; and what is useful for major coastal cities may not be applicable at all in small Midwestern towns. For example, messages that speak effectively to urban black homosexual males will probably have no impact on suburban white heterosexual females.

All of this argues for a coordinated national education program that is defined by highly individual, grassroots approaches to HIV prevention. Different kinds of programs based on different messages are essential to reach different audiences at different times in different locations. Such specificity requires considerable planning, pretesting, and evaluation. HIV prevention programs are nothing if not labor-intensive.

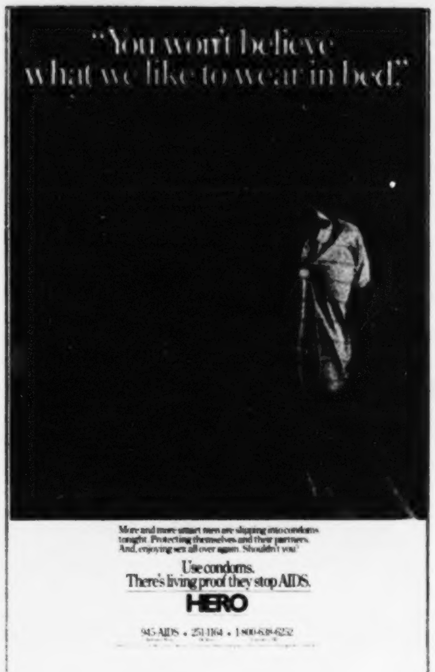
Whatever their differences, effective HIV prevention programs do appear to share certain attributes. The successful ones have worked at least in part because they have 1) involved members of target audiences, 2) developed broad-based local support, and 3) secured a working consensus among local decision makers regarding what needs to be done as well as how best to accomplish it.

Since 1982, when most programs began, other unifying "principles" of HIV prevention education have emerged that appear to cut across and at the same time integrate vastly different types of experiences. Briefly summarized below, these principles are still largely anecdotal in nature; research is in progress to determine their exact relevance and importance.

1. Effective HIV prevention programs do not perpetuate myths and stereotypes. They are based *only* on factual information that is stated clearly and consistently.

What is being said about HIV infection is as important as **how** it is said. This is particularly true when HIV transmission modes must be described accurately. For example, see the difference between advising people to "avoid sexual contact with infected individuals – a common HIV prevention message that manages to inform no more than it offends – and advising them to "avoid unprotected (without a condom) sexual intercourse, either vaginal, anal, or oral, with an individual, either male or female, who is infected with HIV."

Most importantly, educators must seek to change the many stereotypes that already define people's reaction to HIV infection. A case in point is the notion that **who you are** (risk groups) is more important than **what you do** (risk behaviors) in determining your chances of being infected with HIV. By this logic, AIDS in the U.S. was initially a "homosexual disease" because it is so frequently diagnosed in homosexual men. Heterosexuals, by the same token, were not considered at risk because in the early years of the epidemic in the U.S. they were rarely diagnosed, etc. This tendency to focus on groups rather than behaviors has, however, caused serious harm to prevention efforts


"You won't believe what we like to wear in bed."
More and more smart men are slipping into condoms tonight. Protecting themselves and their partners. And, enjoying sex all over again. Shouldn't you?
Use condoms.
There's living proof they stop AIDS.
HERO
945-AIDS • 251-1164 • 1-800-638-6252

PROMOTING "SAFER SEX" FOR GAY MEN: By using attractive male models, this poster's aim is to convince consumers that using condoms is smart and enjoyable.

For example, all men who have sex with men (the behavior) do not necessarily identify themselves as homosexual or bisexual (the group). Those who practice the behavior but do not perceive themselves as part of the group will not be reached by prevention messages that address only the group. This has been proven in several U.S. cities when changes in public advertising copy – from "homosexual and bisexual men are at risk of infection" to "men who have sex with men are at risk" – have provoked huge increases in calls to HIV hotlines from people who never previously acknowledged their own risk.

In the world of HIV, unlike that of other diseases, nothing can be taken for granted.

2. Effective programs reflect the varying degrees of public awareness about HIV and the public's ability and willingness to act.

Individuals as well as whole communities go through a similar process of grasping the seriousness of this epidemic. At each stage, people are willing – or unwilling – to do only so much. Prevention programs must be sensitive to this continuum while at the same time refusing to let public resistance stymie prevention initiatives.

Normal stages in the awareness continuum are: 1) Denial: in which people deny their own risk of infection by choosing to believe that only "they," not "us," get it. 2) Anger: in which reality sets in and people strike out, usually irrationally and usually at those already infected rather than at the virus. 3) Panic: in which everyone is suddenly afraid, whatever their

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African Telecommunications Toward the Year 2000

by Lantiri Riverson

Can Africa ever hope to participate in the worldwide information network? Perhaps a more pressing question is, "Can Africa hope to develop her industries, educational systems, agriculture, transportation network, and public health system without first developing a good telecommunications infrastructure?"

Developed nations have come to recognize that good telecommunications services help support economic and social progress in numerous ways. In Africa, development of this technology has been, until very recently, a low priority. But there is growing interest in developing telecommunications capability in Africa and some notable activities toward achieving that goal.

INTELSAT Carries Africa's Messages

INTELSAT (International Telecommunications Satellite Organization) is currently assisting African countries with their telecommunication needs. Thirty-four of the African nations participate in this global consortium. INTELSAT provides a wide variety of satellite services to African customers, including international telephone linkages, telex and facsimile capability, domestic lease transponder services, international television transmission, and rural and remote telecommunications services. More than sixty INTELSAT earth stations are in place throughout Africa to provide these services. INTELSAT also offers assistance in coordinating radio frequencies for the continent, planning earth station sites, carrying out domestic lease feasibility studies, and training Africans to operate earth stations.

The Pan-African Telecommunications Network (PANAFTEL), initiated in 1962, serves as the African regional telecommunications network. Using an INTELSAT satellite, the PANAFTEL network serves all 49 African countries. Each country operates at least one earth station that links its population through telephone service, television broadcasts, and other communication activities.

ARABSAT Satellite Services

The Arab Satellite Communications Organization (ARABSAT) placed two of its own satellites in orbit in 1985. These are the first generation of telecommunications satellites developed for regional and domestic use for the 22-member Arab League of Nations. Currently, 14 of the 22 member states use ARABSAT services, but there is considerable room for increased use among Arab League nations.

Growth and Challenge

The great diversity of African cultures makes it difficult to design an efficient, effective telecommunications system for the entire continent. A host of monetary systems, languages, geographical and climatic conditions further hampers progress in establishing this technology in Africa. In time, these challenges will be met and decreasing start-up costs for satellite communications will encourage African countries to take more definitive steps toward developing an integrated telecommunications infrastructure.

One step in this direction began with a prefeasibility study that was undertaken in 1980-81 by the International Telecommunication Union (ITU) to determine an appropriate modern telecommunications technology for the integrated development of Africa. The study concluded that the use of a satellite delivery system would be viable. In 1986, an all-African Conference of Ministers of Transport, Communications, and Planning commissioned a feasibility study for a regional African satellite communication system (RASCOM). The ITU is responsible for carrying out the feasibility study, which will include national and regional surveys of existing communication systems and needs. The study, expected to begin in 1987, will take two years. It will examine all elements critical to a successful telecommunication system —local terrestrial networks, management, maintenance, and training, in addition to the satellite technology.

Another promising activity is the proposal by the African Union of Posts and Telecommunications to launch an African satellite (AFROSAT) sometime in the 1990s. A pre-feasibility study was done, and, in 1986, the European Development Fund commissioned a full-scale feasibility study; Zimbabwe and Nigeria have applied to implement this study.

Conclusion

While feasibility studies continue, the nations of Africa must take advantage of existing facilities such as those offered by INTELSAT and work to develop national infrastructures that can assume telecommunications responsibilities once African-controlled satellites are in place. Continued support and a strong commitment will be needed from national and international sources in order for Africa to meet the goal of becoming self-sufficient in telecommunications by the year 2000. ■

Lantiri Riverson is a Research Associate with the Africa Telecommunications Report. *He is currently working on a doctoral degree in communications at Howard University in Washington, D.C.*

(**Heald et al,** *continued from page 6*)

A third indicator of the value of the telephone was the amount of time saved by using the service. All of the system users reported it would have taken at least a day to complete a two-way communication by commercial transport service, letter, telegram, or by travel; whereas by telephone, similar messages were completed in less than one hour. Fully 39 percent of business users surveyed in 1985 reported it would have taken two to five days to complete the communications that were completed in less than one hour by telephone.

Conclusions

Anthropologist Clifford Geertz observed that in many developing regions "information is poor, scarce, mal-distributed, inefficiently communicated, and intensely valued." Economists have argued that an inadequate flow of information seriously hampers efficiency and growth in the production of goods and services. Sociologists have similarly noted the value individuals place on contact with distant friends and family members. Such concerns have recently led policy makers and researchers to focus more attention on rural telecommunication.

The results of the RCSP project combined with a growing number of studies in other rural telecommunication initiatives, strengthen the argument for greater future attention and investment in this sector. Clearly, telephone communication and related services are desired by rural residents. The rapid growth in system utilization, the fees that individuals are willing to pay for single calls as well as private telephone installations, the time and travel saved, and the fact that many residents claimed that the telephone system was irreplaceable are all powerful indicators of the benefits and levels of impact that the system produced in the pilot project communities.

Currently, the debate over the expansion of rural telephone systems centers on their ability to sustain recurring costs and cover initial capital investment. Within the first two and one-half years of operation, the RCSP revenues defrayed nearly 90 percent of its operations cost, an encouraging return on an infrastructural investment.

Although at present, significant growth in rural telecommunication systems may require subsidies, the future promises continuing decreases in equipment costs and a growing awareness that telephone service is valued by rural users. Telephone service may be an important means of narrowing the economic, educational, health, and social gaps between the urban and rural sectors in developing countries. Telecommunication investments have the potential to yield extraordinary benefits. ■

Gary Heald teaches in the College of Communications at Florida State University, Tallahassee, Florida. Steven Klees teaches in the College of Education at Florida State. Both were consultants on the RCSP project. John Mayo was the Project Director and Principal Investigator for the Peruvian Rural Satellite Project. He is currently the Director of the Center of International Studies at Florida State University.

Distance Education: The Promise and The Confusion

by Allan F. Hershfield

There is much confusion about the role of telecommunications and instructional technology in distance education. Because of this confusion, the same fundamental error is made over and over again. Too often, those planning to use telecommunications systems to serve distant learners focus their attention on developing the technical aspects of the system instead of first studying the clients to be served and determining the nature of the programs to be delivered. When expectations are not met and programs fail, considerable money is wasted, civic and government leaders become disillusioned, and potential clients are disappointed. After such an experience, any mention of "distance education" or "telecommunications" is greeted with derision.

What follows is a portrait of the experience of the Learn Alaska Network. It illustrates the nature of the problems that can arise when a distance education system is poorly planned and implemented and uses inappropriate technology.

Learn Alaska Network

Alaska, separated by some 1,000 miles from the rest of the U.S., is primarily a rural state with about 34 percent of the population located in small, widely scattered communities. It has long been a state policy to send people living in these small communities to urban centers for extended periods of education and training; a policy not particularly effective or popular among the population. Dropout rates are high, alcoholism problems increase, and indigenous cultural values tend to disintegrate with long separations from home communities

In response to this situation, seven years ago, a statewide telecommunications system – primarily using television – was created to deliver elementary, secondary, and university programs and other skill-building courses to Native Alaskans living in rural areas. The rationale for the creation of this system was that Alaskans living in rural areas needed better access to quality educational programs at all levels which could not be provided economically or efficiently by traditional means.

Low-powered television transmitters, each with its own satellite down-link facility, were placed in more than 150 designated communities. A major television production facility and satellite up-link were established in Anchorage, along with electronic hook-ups for audioteleconferencing. The programs and courses were either to be produced in Anchorage or acquired from public broadcasting stations elsewhere in the U.S. and televised to Native Alaskan communities. The audioteleconferencing network would be used both to deliver audio-only courses and to give students taking televised courses an opportunity to ask questions and to discuss the materials.

The State of Alaska spent approximately US$30 million to purchase and install telecommunications equipment and for ancillary facilities for the Learn Alaska Network. The University of Alaska Instructional Telecommunications Consortium (UAITC) was established to operate the television system on behalf of the University and the Department of Education, and UAITC went on the air in 1982. (See Learn Alaska article in *DCR* 48.) In 1986, just four years later, the Network was closed down by a combination of declining state revenues and growing disillusionment with the service. Today, the audioconferencing network continues in use as a delivery vehicle for course work along with very limited use of the television system, but the state government is considering eliminating both systems entirely to save additional funds.

Given the way in which the Network was planned and operated, it was doomed to fail from the beginning. This failure was brought about by several related factors:

- With only 30,000 native Alaskans scattered throughout the state, there were not enough people in the intended audience to justify either the sophisticated, television-based system or the extensive programming that was proposed.
- Only $200,000 was provided annually to develop programs for this $30 million system – an inadequate sum for creating the type of programming envisioned for the network. As a result, most of the material was drawn from existing programming that had been produced by public broadcasting stations in other states, and had little relevance to the needs or interests of Native Alaskans.
- Those in charge of the Learn Alaska Network operated it as a public broadcasting system. They did not think of it or run it as an educational delivery system, one that would help Native Alaskans improve and enrich their lives through acquisition of new knowledge, skills, and attitudes. Two different sets of goals were in conflict: those of educators whose concern is content, and those of broadcasters whose concern is high production value.
- Controversy occurred within the University of Alaska over which departments would control the Learn Alaska Network, and how the annual programming funds would be divided among them.

Who are the Clients?

Had those in charge of planning the Learn Alaska Network asked the question, "Who are the clients: what are their social, economic, and cultural characteristics, how many are there, and where are they located?" they would have seen that the per-recipient start-up costs would come to nearly $1,000 per Native Alaskan. Had the planners considered that a low hourly cost for the production of televised programming was $2500, they would have realized that ten hours of such programming per day for 365 days a year would come to a total of $9,125,000 – an additional recurring sum of $304 per person. With only $200,000 allocated per year to support this system, the original plan of using television to provide distance education in the state was clearly too expensive.

The Learn Alaska Network is, then, a classic example of the negative consequences of focusing on sophisticated telecommunications technology as an end in itself rather than as a means to serve a particular clientele. A preliminary assessment would have clearly shown that the proposed plan was not economically practical, particularly if one added to the initial $30 million capital investment, the large operating budget required to develop and deliver appropriate *television-based* distance education programming to these widely scattered locations.

A more practical and inexpensive approach would have been to install an audioteleconferencing system alone or in combination with a facsimile or microcomputer network for the transmission of print materials.

The Importance of Investing in Software

Based on their own formal education experience, most people assume there is a single model of the educational process that can be applied to all levels of instruction. That is, all teachers plan courses, present their materials, assess students' progress, etc. Another common assumption is that courses are generally developed when the need arises or while courses are being taught.

Given these assumptions, it is not difficult to understand why poorly advised decision makers believe that once a technically sound telecommunications system is in place, all that is needed is to transmit typical classroom content, with little additional preparation, planning, or money required.

The failure to realize the importance of providing funds for the creation of high quality distance education software is, all too often, the key problem faced by those who wish to serve distant learners via telecommunications systems. The knowledge that the state would not provide much more than $200,000 annually to program the system should have doomed the idea of using television as the primary medium in the very beginning.

Instead, the main focus of the Learn Alaska Network was on the installation of the educational television network. The failure to develop appropriate distance education programs before deciding what kind of telecommunications system to use was a crucial mistake that contributed substantially to the demise of the entire network.

While railroads were built on the assumption that they would generate traffic, educational telecommunications systems will not generate use simply because they exist. Policy decisions must be based on the unique needs of an educational and academic program that dictate the type of educational telecommunications system finally put into place. ■

Allan Hershfield is Executive Vice Chancellor of the University College at the University of Maryland, College Park, Maryland.

On File at ERIC

by Barbara Minor

Documents recently entered in the ERIC (Educational Resources Information Center) files include a resource directory; reports on the use of television in Samoa and Australia; a report on the use of telecommunications for education in Alaska; and the proceedings of a seminar on information systems for development. All of these documents are available in both microfiche and paper copy from the ERIC Document Reproduction Service (EDRS), 3900 Wheeler Ave., Alexandria, Virginia, U.S.A. Be sure to include the ED number and payment in U.S. funds for the price listed plus shipping. Shipping costs can be calculated on the basis of three microfiche per ounce and 75 microfiche or pages of paper copy per pound.

● *Resource Materials Used in Distance Teaching by Higher Education Institutions.* 1984, 49pp. (ED 274 339)

Intended for use by institutions in developing countries as a source of information for locating available resources on which to draw for training and planning activities in distance education, this directory published by the Unesco Regional Office for Education in Asia and the Pacific provides information on the types of instructional materials that are being used by 34 institutions of higher education in Australia, India, Pakistan, New Zealand, Sri Lanka, and Thailand. The information was compiled through the use of proformas sent to a number of institutions in 11 countries. The institutions that responded are listed by country in alphabetical order, and the instructional materials are listed together with the appropriate subject areas or courses of study. Instructional media most commonly used are printed correspondence, audiocassette tapes, and videocassettes, but some of the programs also use telephone tutorials, study guides, filmstrips, computer-managed instruction, or videodisc. Information provided on the instructional materials listed includes the language(s) they are available in; the person to contact for further information; and, in some cases, the prices of materials and suitability of courses for other institutions. The proforma used to collect the information is appended. Available from EDRS in microfiche for 78¢ or in paper copy for $3.70.

● Thomas, R. Murray. *From Talking Chiefs to Videotapes: Education in American Samoa – 1700s to 1980.* 1986, 180pp. (ED 273 544)

The result of a decade of collecting documents, interviews, and observations, this document describes the operation of the modern day Samoan educational system against the historical background of three previous eras that reach back over 200 years to a time when Samoa was virtually unknown to the Western world. The development of Samoan education over this period is compared to the development of a river with a main stream and three successive tributaries. The main stream, described in Chapter 2 (Samoan Chiefs – 1700s-1830), was the original Samoan way of life centered around a chieftain system. Described in Chapter 3 (Missionaries – 1830-1900), the first tributary represents educational growth during the missionary era. The second tributary, described in Chapter 4 (Officers of the Navy – 1900-1961), represents expansion of the school system under United States Navy administration following the period of political turmoil out of which American Samoa emerged. Described in Chapter 5 (Videotapes – 1961-1975), the third tributary represents educational innovation via instructional television. Chapter 6 (In 1980 – Future Prospects) gives a brief overview of the status of the educational system at the close of the 1970s, followed by a description of significant problems faced by the territory's educators at the outset of the 1980s. An extensive bibliography is included. Available from EDRS in microfiche for 78¢ or in paper copy for $14.80.

● Simpson, Daniel D. *AUSSAT – The Australian Satellite System: Applications for Education.* 1985, 18pp. (ED 274 334)

With the introduction of the Australian Satellite System (AUSSAT), a new era of communications will begin for all of Australia that will enhance existing distance education services by bringing more cost effective communications to a broad range of users. The improved capacity, reliability, and quality of communications will make possible the offering of Schools of the Air (SOTA) programs suitable for children or adults at home or at community locations, and will extend services beyond primary to secondary and tertiary levels. The satellite can offer students readily accessed programs that combine correspondence papers, audiotapes, and interactive audio. It can also offer television broadcasting of lessons, delivery of video resources, and television and audio materials for home tutors. Additionally, the satellite provides a communication medium both between and within institutions, video seminars, video conferences, and network link facilities for the collection and distribution of data. The advent of satellite communications has brought an opportunity for educators to conduct trials of the use of this technology and test several models over the next few years. This paper describes one such model, the School of the Air centered at Mt. Isa in Northern Australia, which will conduct a 12-month trial of the use of satellite communications. Diagrams illustrate video and audio data signal transfers and the two-way channeling arrangement. Available from EDRS in microfiche for 78¢ or in paper copy for $1.85.

● *Educational Telecommunications for Alaska.* Volume I: Executive Summary. 1982, 47pp. (ED 217 890)

The first of four volumes, this executive summary briefly discusses the educational situation in Alaska in terms of geography, climate, and ethnic groups; reviews the state's involvement in the National Institute of Education's Education Satellite Communication Demonstration; describes project management and the introduction of innovations; and reports on the three systems developed by the Educational Telecommunications for Alaska Project, which was undertaken in 1977 to provide support for schools throughout the state. The Administrative Communications Network – which provides administrative and instructional support among the state's 52 school districts, Regional Resource Centers, and the State Department of Education – is reviewed in terms of objectives, electronic mail box (EMS) operation, a user evaluation, and its current status. The objectives of the Alaska Knowledge Base System are outlined, and information is provided on its implementation, database content, and access to the database, as well as its current status. A description of the Individualized Study by Telecommunications (IST) system includes the objectives, the IST model, pre-operational evaluation of course effectiveness and student and teacher attitudes, and cost effectiveness. A brief glimpse of the future concludes the report. Available from EDRS in microfiche for 78¢ or in paper copy for $3.70.

● *Scientific and Technological Information for Development. Proceedings of the Ad-hoc Panel of Experts on Information Systems for Science and Technology for Development* (Rome, Italy, January 21-25, 1985). 1985, 213pp. (ED 272 158)

The report of the ad-hoc panel and the 25 papers in these proceedings cover a wide spectrum of issues and perspectives relating to information systems, services, and networks at both the national and international levels. The first part of this six-part volume presents the panel's report, which reviews the history of the panel and its purpose and summarizes its considerations of concepts and issues; the existing situation and needs of national information systems; the impact of trends in information collection, processing, and dissemination; the nature of information requirements; and international linkages and the establishment of a global information network. The second part contains three papers on concepts and issues, terminology definitions, and an overview of issues relating to a United Nations global referral network. The 11 papers in the third section provide a broad view of the status of scientific and technical information activities in developing countries and descriptions of national and regional experiences in Egypt, Jamaica, India, Hungary, Honduras, the Socialist Republic of Romania, Kuwait, Ghana, Mexico, and Africa. Part 4 presents four papers that examine problems and trends, including constraints on the flow of scientific and technological information, availability of U.S. public and private databases and services in developing countries, development of an information infrastructure, and low-cost satellite communications. The fifth part includes two papers, one on priorities in a global network, and the other on problems and prospects of networking in technological information in Asia and the Pacific. The final part provides five descriptions of experiences of the organizations of the United Nations system and other institutions. Lists of panel participants and abbreviations are appended. Available from EDRS in microfiche for 78¢ or in paper copy for $16.65. ■

Barbara B. Minor is the Publications Coordinator at the ERIC Clearinghouse on Information Resources, Syracuse University, Syracuse, New York, U.S.A.

Briefly Noted

by Robert Vittel

- For readers interested in obtaining educational audiovisuals in French, a very helpful directory has recently been compiled by the ***Agence de Coopération Culturelle et Technique (ACCT)*** (Agency for Cultural and Technical Cooperation) in Paris. ***Répertoire des Diffuseurs de Documents Audiovisuels Educatifs dans le Monde Francophone (films et vidéogrammes)*** (***Directory of Educational Audiovisual Materials Suppliers in French-Speaking Countries***) is an inventory of nearly 800 organizations in francophone member-countries of the ACCT, and several international organizations, who produce and supply educational and training films and videos. The Directory lists thousands of French-language films and videos. An alphabetical subject list is provided at the end and is helpful in locating materials in specific areas of education and training. ***The Directory*** is available in French only from ACCT, 13 quai André Citroën, 75015 Paris, France.

- Francophone radio broadcasting trainers will be interested in a Food and Agriculture Organization publication called ***Communiquer Grâce à la Radio*** (***Communicating Thanks to Radio***), a French-language adaptation of an earlier Asia-Pacific Institute for Broadcasting Development manual entitled ***Educational Broadcasting – Radio***. This French version covers the learning process and its application to broadcasting; the use of objectives in educational broadcasting; systematic planning of educational radio programs; writing for radio; interview, magazine and discussion program formats; and the use of drama in educational broadcasting. Each chapter begins with an introduction of the concepts to be covered, followed by more complete definitions of each concept, leading into examples and practical exercises to facilitate learning of the concepts. As was the original manual, this version will be useful to those who conduct radio training courses, but lack experienced training personnel, resources, or training materials. from the Food and Agriculture Organization, Division of Information, via delle Terme di Caracalla, 00100 Rome, Italy.

- For readers interested in current writings on cultural and social communications for development in the Latin America region, the ***Centro de Estudios sobre Cultura Transnacional*** (Center for the Study of Transnational Culture) has been publishing a quarterly collection of papers called ***Materiales para la comunicación popular (Papers on Popular Communication)***. This is a well organized, compact collection of booklets, nicely packaged in a handy folder. Each issue (there are now eight) includes unedited articles, issue papers, interviews, and announcements coming from diverse sources in the region. The main objective of the publication is to more widely disseminate writings on communications in Latin America while promoting exchange and cooperation among institutions and professionals working in the field. ***Materiales para la comunicación popular***, in Spanish and Portuguese only, is available by subscription from: ***Centro de Estudios sobre Cultura Transnacional***, Apartado 270031, Lima 27, Peru ▪

Robert Vittel is Information Specialist in the Clearinghouse on Development Communication.

ARABSAT: A Regional Approach to Telecommunications

by William Amt

The Arab States comprise a vast territory that encompasses the various social, political, and economic climates of 22 nations. In spite of their differences, these countries share a common language (Arabic) and a predominant religion (Islam). Telecommunication technology has recently increased the flow of information not only within these countries, but between them as well, thus contributing to the "Arab identity." Currently, most Arab countries are members of the INTELSAT satellite system, but in response to the need voiced by the Arab States Broadcasting Union (ASBU) for an autonomous, all-Arab satellite system to handle regional and domestic communications, the Arab Satellite Communications Organization (ARABSAT) was formed.

In 1985, two ARABSAT satellites were put into orbit, the second serving as a back-up to the first. They are equipped to provide about 8,000 simultaneous telephone circuits, seven channels for television, data, telex and facsimile, and a channel for transmission to rural communities. Ground control stations are located in Saudi Arabia and Tunisia, and several countries have built earth stations of various sizes to pick up and transmit signals over the system.

The services that can be provided over the system are numerous. Using the media of telephone, television, slow-scan video, radio, telex, and facsimile, such services include: a more effective conduit for Arab news agencies to share information, thereby replacing reliance on Western sources for news about Arab affairs; entertainment programming; an interactive, two-way distance education network (formal and non-formal); emergency communications to disseminate information on disaster, police, and fire matters; telemedicine (better trained urban doctors diagnosing patients located in remote clinics); audio- and videoconferencing; inter- and intra-governmental information exchange; interactive databases; and increased telephone and telex service. These services have the potential to contribute greatly to the overall development of the region, particularly of its poorer nations and rural areas.

Greater Use Promoted

Despite the initial excitement about ARABSAT and the above-mentioned potential uses of the system, it continues to be underutilized. Since 1985, use of the system has been limited mainly to trial transmissions. The most important of these was a news and entertainment program that was initiated in October 1985. Fourteen member organizations of ASBU transmit their programs via either ARABSAT or microwave links to Tunisia, where they are re-transmitted to participants later the same day. Programs include daily news, a weekly educational program, a weekly program package prepared by a different member each week, and live coverage of major Arab cultural and sporting events. This important exchange is continuing.

A number of factors have hindered increased use of ARABSAT – the recent decline of oil revenues among member nations resulting in late payment of membership dues; fewer orders for ARABSAT satellite circuits (countries are taking advantage of INTELSAT's less expensive circuits); and limited construction of earth stations. In fact, only seven of the 22 participating countries currently have operational earth stations. Technical, administrative, and political problems have also resulted in delays. Finally, there is a recognized need for improved inter-Arab cooperation which could be better realized if Egypt were a member of ARABSAT. Egypt not only has the largest number of potential users and the most varied and popular programming in the region, but it also is generally recognized as an integral contributor to the "Arab identity."

In order to motivate Arab countries toward the coordinated future use of ARABSAT, the Joint Arab Committee for the Use of the Satellite Network was established. A regional open university system and more educational television programs focusing on the region's different cultures are among the projects currently being considered by the Committee.

To say that it would be easier for the Arab States to use the more affordable INTELSAT system for all their needs is to miss the *raison d'être* of ARABSAT. While ARABSAT has had more than its share of problems, the goal of the project was based on Arabs' legitimate desire to be informationally and technologically self-reliant. Much needs to be accomplished before this dream becomes a reality, but, ultimately, the success of ARABSAT depends on its members' commitment to nurturing the "Arab identity."

Sources of information used to write this article include reports provided by the Arab States Broadcasting Union and articles from ***InterMedia*** and ***Satellite Communications***. ▪

William Amt is Program Assistant in the Clearinghouse on Development Communication.

Advanced Satellite Technologies: Implications for the Developing World

Louis Bransford, Suzanne Douglas, and Deborah Gilman

Satellites can penetrate the isolation of remote areas in the developing world. New advances promise lower costs and more appropriate technology that put telecommunication services within reach of rural communities. We have included this article in our review of recent telecommunication activities because, though currently out of reach of many developing countries, the technologies discussed below will eventually have a tremendous impact worldwide.

Research and development sponsored by the U.S. National Aeronautics and Space Administration (NASA), by the European Space Agency (ESA), and by the Japanese National Space Development Agency (NASDA), are producing exciting new technologies destined to revolutionize the communications satellite industry. Next generation satellites will include advanced technologies with significant "high tech" applications geared toward the scientific needs of the developed world. In addition to these somewhat esoteric uses, some of the technological breakthroughs will have beneficial implications for developing world communication services. It is anticipated that these new technologies could make integrated video, voice, and data services more readily available and at reduced cost to underserved people throughout the world.

The Technologies

Three main technologies are now under development as part of NASA's Advanced Communications Technology Satellite (ACTS) Program. The first of these new technologies is the baseband processor, or "switchboard in the sky." With the switching (normally the interface between the public telephone network and the long distance carrier) occurring onboard the satellite, switching points on public terrestrial networks can be avoided or "bypassed." Each time a switching point is bypassed the transmission cost goes down, so that large savings in telecommunications costs can be realized. The decrease in cost promises to lower long-distance phone calls to 10-12 cents per call minute for sparsely populated areas where telephone companies find it too expensive to upgrade services.

The new technology will enable telephone companies to expand and extend rural service inexpensively because one small earth station can serve the needs of an entire community. The implications quickly become evident for the developing world where phone service needs remain unmet. For example, a 1.8-meter very small aperture terminal (VSAT) with three 56 Kbs voice channels could provide up to 25 five-minute phone calls per hour with the probability of 80 percent availability. Judiciously used, this capacity could serve more than 100 families in a village.

The second technological advancement involves hopping and scanning spot beam technology. Most of today's satellites cast a coverage beam or "footprint" over a large area on the ground (think of a satellite beam as a flashlight pointed down from space with the light covering a specific surface). Spot beams, on the other hand, concentrate on smaller areas. The benefit of a hopping spot beam to a consumer is that he will be able to "request" that beam on an "as-needed, pay-as-you-go" basis, or in other words, "you use what you need and pay for what you use."

New spot beam technology will also facilitate more efficient use of the radio spectrum allocated to commercial communications satellites. A combination of hopping spot beams in the same frequency band, for example, can cover the entire continental United States simultaneously. The resulting frequency re-use capitalizes on a finite resource. Current debate over spectrum allocation will essentially become a non-issue. Theoretically, a developing country could lease spot beams from a regional satellite to form communications hubs within the country, primarily in more populated areas. Whether this arrangement is appropriate for developing countries is problematic. A single country beam with VSAT networks might be the more economical solution in the near term.

The third development, the low-power laser for communications, will allow intersatellite linkage. Technically, it will be possible to have an American satellite connected via laser directly to a European or Australian satellite, avoiding the need for a double hop which creates noticeable delays during phone conversations. The economic and political viability, however, remains to be tested. It must be noted that when intracountry communication services are nonexistent or limited, the elimination of a double satellite hop for long distance telephony becomes less meaningful.

The Implications

A mix of next generation satellite technologies will enable universities with multiple campuses, businesses with widespread branch offices, and government departments with regional divisions to establish economically viable private satellite networks. The advanced technologies allow for the integration of video, voice, and data on a scale not possible before on communications satellites. There will be significant flexibility and increases in the amount of data that can be transmitted and received on VSATs. A next generation 1.8-meter earth station could be capable of handling (transmit and receive) 1.5 million bits of information per second as opposed to a comparable earth station capacity of 56 thousand bits per second.

Databases such as the United Nations Environmental Programme's (UNEP) Global Resource Information Database (Project GRID), whose worldwide data collection can provide valuable agricultural and meteorological information to developing countries, will be more accessible with the advent of new satellite technology. In the future, it should be relatively easy technically, and economically feasible to have remote terminals transmit and access information from any central computer collection.

Health networks will be able to expand services to rural areas on a more comprehensive scale. The larger capacity on newer satellites combined with relatively small transportable earth stations will allow, for instance, the transmission of digital radiology pictures from distant areas back to a central hospital. Instructions to the traveling medical team on proper follow-up procedures will include video as well as voice instructions.

Conclusion

It is anticipated that by 1992, the United States, Japan and Europe will all have sophisticated onboard switching, spot beam technologies, and laser packages on communications satellites. But what can Third World countries expect from the next generation of satellites?

- advanced switching technology with the potential for reducing telephone costs;
- frequency re-use capability ensuring developing countries access satellite services;
- prospects of regional satellites offering integrated video, voice, and data services to meet diverse communications needs of many countries.

However, the following questions remain to be answered. How appropriate is the new satellite technology for the needs of the developing world? Can Third World countries afford to wait for technology and can they afford it when it becomes available? A more fundamental question is, will advanced technology make a difference in developing countries? The consensus is that it will. ■

Louis Bransford is President of the Public Service Satellite Consortium, Washington, D.C. Suzanne Douglas is the Director of Information and Research, and Deborah Gilman is Director of ACTS Development Services at PSSC.

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A Study in Decentralization: The Liberian Rural Communications Network

by Michael Laflin

Economic conditions have forced many developing countries to take a hard look at their social services and to ask: "What services can we, the central government, afford to provide in the years to come?" and "If we believe that a level of social services, currently beyond our means, is essential to our well-being and development, who is going to pay for them?" While no one would agree that central governments should abdicate all responsibility for social services and place them in the hands of the private sector or local communities, most developing country government officials would agree there are functions better implemented and controlled by local government agencies or communities, and that the shortage of funds has provided an incentive for them to trade control in return for local participation in funding.

A Definition

Decentralization is the transfer of responsibility for planning, management, resource-raising, and allocation, *from* the central government and its agencies *to* field units of the central government ministries or agencies, or to semi-autonomous corporations, voluntary or nongovernmental organizations.

Key *external* issues in decentralization seem to be how local communities can be persuaded to provide resources to maintain social services (as opposed to providing funds and labor to build schools or clinics); and what share of decision making (about curricula, for example) communities will expect in return for contributing resources.

The *internal* management issues seem to be the extent to which loosely connected elements of a system are coupled (to what extent information channels are held constant or severed); to what extent national policy is translated at the regional and local level into commonly held beliefs and aspirations so that all elements proceed with confidence in each other; and to what extent regional units are capable of ordering their own affairs.

If these conditions can be mastered, then decentralization offers benefits of fluid, relevant, and swift responses to events that may be widely separated in space and time. *Perhaps most important for public sector agencies, it promises an improved quality of work life for the people within the system.*

A Decentralized Radio Network

The Liberian Rural Communications Network (LRCN), the development broadcasting branch of the Liberian Broadcasting Service (LBS), is a decentralized system operating successfully in a country where, for many years, there was limited government investment or interest in regional development. Previously, government operations were centralized in Monrovia, the capital city.

LRCN is comprised of three rural radio stations in Gbarnga, Voinjama, and Zwedru and a production facility in Monrovia. One station is a three-hour drive from Monrovia, but the other two are extremely remote: it can take two or three days to reach them by road in the wet season. Broadcasting in ten local languages, the rural stations provide regionally oriented development information and educational programming to their listeners. Each station has its own production studio, a 10kW medium wave transmitter with a signal strength of about 75 miles, and is equipped with a portable transmitter that fits into the back of a pick-up truck for on-site broadcasts. Programs of national scope are prepared in Monrovia and relayed to the rural stations for broadcast.

According to the decentralization mandate, each rural station must generate some local funds for the network by finding sponsors for its development information and local-language broadcasting services. The Gbarnga station, for example, received US$4500 in local revenues in October 1986 from long-term contracts with development agencies, from commercial sponsorship, and from US$3-personal message fees, and has now sold all of its air time to sponsors.

(*Continued on page 6*)

Communicating With Farmers: Lessons Learned and To Be Learned

by Howard E. Ray

Extension institutions and technology transfer programs exist in almost every developing country. Yet, coverage of farm families is still limited, the quality of developing country extension programs is seriously questioned, and the transfer of potentially beneficial new and underutilized technologies continues to lag.

Incorporating appropriate multichannel communication strategies into extension programs can improve this situation.

Many information units already exist in developing country extension programs; and mass media, audiovisual aids, and printed materials are used extensively. However, the use of communication skills, media, and methodologies is typically ad hoc and fragmented. Too often, they are poorly integrated into the total extension program.

Experience in some health and agriculture projects indicates that use of multimedia strategies integrated into extension-type programs can, indeed, increase their impact.

In agriculture, for example, the Masagana 99 rice-promotion campaign in the Philippines energized the national rice-growing program and helped to transform the Philippines from a rice-importing to a rice-exporting nation. One of the key elements in Masagana 99 was a mass communication campaign using radio and print materials in combination with intensive training of extension agents.

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**Clearinghouse on
Development Communication**

**1255 23rd Street, N.W.
Washington, D.C. 20037 USA
Tel. (202) 862-1900
Cable: ACADED
Telex: 197601 ACADED WASH**

**Judy Brace, Director
Kathleen Moran, Editor
Robert Vittel, Information Specialist
Janice Stallard, Program Assistant
ISBN0192-1312**

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International Division

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(**Ray** *continued from page 1*)

Social Marketing for Agriculture

It is tempting to use mass-media product advertising techniques to sell new agricultural practices as if they were soft drinks or soap. The situation in agriculture is much different; complex, highly interrelated innovations need to be introduced to many segments of a population. In the pursuit of complex, socially beneficial objectives, as in the case of agriculture, some programs have emerged that add more sophisticated marketing strategies to advertising techniques. These have been described as social marketing techniques – the design and marketing of social ideas that consider product planning, pricing, communications, and marketing research. It has been used in the developing world to promote breastfeeding, health and nutrition, family planning, literacy, and, to a more limited extent, agricultural technology.

Evidence indicates that combining some of the social marketing techniques learned from the health sector with some mass marketing techniques used in previous agricultural projects could help agricultural extension programs to: cover the target audience comprehensively and quickly; be flexible in recommending technology packages; gather information from farmers as a basis for adapting recommendations; and collaborate with researchers, suppliers, and marketing services.

Three Vital Elements

From experiences in health and agriculture extension, three elements appear to be vital for success in communicating with farmers – farmer orientation, targeted change, and an integrated media network. Agricultural communicators must learn when addressing farmers, to use a vocabulary that presents issues and problems from the farmer's orientation. This hastens the process of integrating an innovation into a farmer's view of how to solve a problem. With the help of specialized village-based research techniques, the farmer's perspective will become clearer, and constraints – obvious and hidden – can be identified.

Targeted change means information must reach the farmer when he needs it, and often, in order to reinforce a new behavior so it becomes part of his routine practice. This calls for a comprehensive communication strategy that accounts for the many unpredictable factors farmers confront throughout a production cycle.

The third part of this social marketing package is the media network. Elements of each of the media groups (broadcast, print, interpersonal) must be selected carefully and then integrated in a way that builds upon their unique advantages so that a "multiplier effect" is achieved. This can be accomplished by using channel strategies that are based on preprogram research to determine where and how people get information.

Organized effectively around these three elements, communication can directly increase program participation. It can also provide information to reduce risk and improve efficiency in using services, and lead to the adoption of new practices. These can be accomplished by building on indigenous information systems and on available skills and facilities, and by integrating them into private and public sector efforts in extension.

Important Guidelines

Synthesizing the experiences and approaches discussed, some important guidelines can now be offered for developing projects or project components that use mass communication in support of technology transfer:

- Verify that necessary conditions for change are met, such as available appropriate technology, required inputs, markets, and incentive prices at the farm gate.
- Specify clear behavioral objectives.
- Determine the characteristics of the target population to ensure that messages, channels, and presentations are appropriate and acceptable to the receivers.
- Use mass media to complement staff efforts in the field, to increase staff effectiveness and coverage.
- Obtain frequent, reliable feedback from the target population to guide program changes and the ongoing development of media messages.
- Localize messages and media presentations.
- Provide for continuing job-oriented training and staff development.
- Set priorities. Seldom can the communication system meet all the possible demands that could be placed upon it.
- Think in terms of a comprehensive communication support system in which all channels – media and face to face – are mutually reinforcing.
- Of all the foregoing, perhaps the most important are those that pertain to knowing the farmers and continually adjusting the program to the farmers' needs and constraints.

The above approaches have seldom been applied comprehensively in extension as a single, ongoing communication support system. We must exploit lessons learned from social marketing, behavioral sciences, and distance teaching, and study systematically the networking and feedback functions of communication in extension. Most importantly, we must strive to institutionalize comprehensive systems of communication support – something few extension systems in the developing world have accomplished to date. ■

Howard E. Ray, Vice President and Director of Agricultural Sciences and Technology at the Academy for Educational Development is Project Director for the Communication for Technology Transfer in Agriculture Project.

An Examination of the Evaluation Process

by Shakir Hussein

Evaluation, an integral and crucial component of many agricultural projects, greatly affects both the implementation process and project outcomes; but the methodology used in evaluating agricultural interventions in developing countries is still evolving.

Communication for Technology Transfer in Agriculture (CTTA), an innovative agricultural communication project that considers evaluation to be indispensable for planning, implementation, monitoring, and impact determination, gives a framework for discussing the evaluation process. (See adjacent box for a description of the CTTA Project.)

The CTTA project uses three types of evaluation to assure program success and to objectively determine its achievements: developmental investigation (sometimes called context evaluation), formative evaluation, and summative evaluation.

Developmental Investigation

Developmental investigation is conducted early and quickly as a guide to planning and implementation. Using focus groups, informant surveys, and observation techniques the CTTA investigation seeks to determine:

- available and appropriate agricultural technologies that farmers can adopt successfully, given their constraints and the existing institutional support;
- cultural characteristics of farmers who will be introduced to selected appropriate technologies; their social structure; their attitudes toward technology, knowledge, and use of current technology; and their constraints to adopting new technologies;
- the existing agricultural infrastructure such as markets, roads, and extension services, and policies that could affect the adoption of new technologies.

Formative Evaluation

Formative evaluation identifies strengths and weaknesses of the implementation process and how well CTTA objectives are being met. These studies, conducted regularly throughout the project, provide information at a time when adjustments can be made that will have a significant impact on the outcome.

Summative Evaluation

The purpose of a summative evaluation is to measure the results and effects of a project so that informed decisions can be made based on these findings. To support the evaluation process, qualitative, anthropological data are collected, contributing to the overall impact studies carried out using quantitative measurement techniques. These data are not only critical to the future of CTTA and similar projects, but also help project people make major decisions about the ongoing program.

What to Evaluate?

The summative evaluation process will help CTTA answer the questions: "Does the new technology work?" How can it be improved? "Is it making an impact?" and "Is it worth the cost to the farmer?" To answer these questions, it is first necessary to know how the project is *supposed* to work.

The following model shows relationships among the independent, dependent, and control variables designated for CTTA. The independent variables are the communication strategy and extension activities. Dependent variables include awareness, knowledge, and use of the introduced technologies, and productivity changes due to technology adoption. Control variables encompass personal characteristics of the targeted farmers, their attitude toward the technology, such situational factors as farm size, soil type, climate, etc. and institutional factors including among others supplies, services, markets, roads, extension serv-

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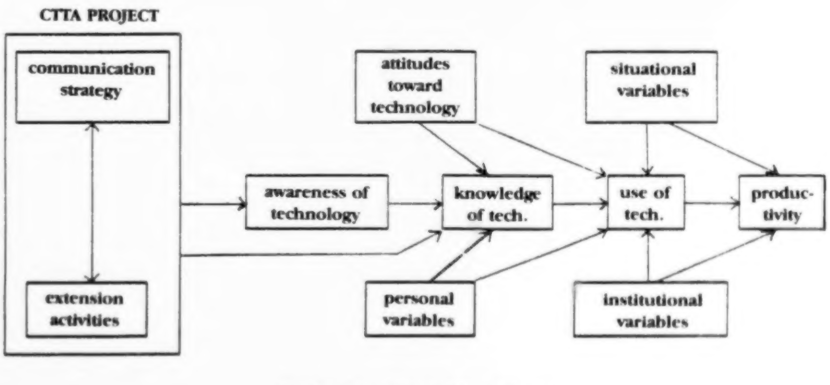


Evaluation-Variables Model

CTTA: An Innovative Agricultural Communication Project

The Communication for Technology Transfer in Agriculture Project (CTTA) provides an opportunity to apply innovative approaches for effective use of communication, especially mass media, to support agricultural extension programs.

The CTTA objective is to develop, test, and demonstrate integrated, multi-channel communication strategies and methods that increase the impact of extension-type programs at costs affordable for sustained use by developing nations.

Pilot projects will be established in up to nine developing countries to apply a communication methodology to increase farmers' awareness, knowledge, and use of appropriate and affordable agricultural technologies.

Findings from other communication projects in agriculture, health, and education will be applied in CTTA, and behavioral analysis, social marketing, and instructional design will be incorporated into the communication strategy.

The project collaborates with existing public and private sector institutions in developing and testing its strategies, with particular emphasis on strengthening interaction between extension, research, other support services, and farmers.

Pilot projects have been established in Honduras and Peru, and pilot activities are being initiated in Jordan, and soon in Indonesia. Site development activities are under way in Latin America, Asia, and Africa.

CTTA is jointly developed, managed, and funded by the Offices of Education, Agriculture, and Rural Development of the Bureau for Science and Technology of the U.S. Agency for International Development in collaboration with Regional Bureau Technical Staff and the USAID Mission at each collaborating site. It is being implemented by the Academy for Educational Development, 1255 23rd St., N.W., Washington, D.C. 20037, U.S.A.

(**Hussein** *continued from page 3*)

ice, and technology development.

The communication strategy of CTTA feeds information into the summative evaluation process illustrated in the above evaluation-variables model. The strategy uses both mass media and interpersonal contacts to disseminate information, but also incorporates local social organizations and indigenous communication channels such as neighbors talking to neighbors, into its network.

Initially, the strategy is to make farmers aware of useful technologies they could adopt within the constraints of their environment. The selected technology might be a new one that has been developed through research, or it might be an indigenous technology that is not currently being used. It may be for a particular crop which would call for considerations such as soil preparation, seed selection, fertilization, pest control, or storage. Or, it may have a broader application related to improving soil conservation or water management procedures.

The evaluation-variables model assumes that when farmers become aware of the recommended technology, many of them will seek more information from extension workers or from other farmers. The communication strategy will be adjusted to respond to this newly created need for information.

Based on the model, once a farmer learns how, when, and why a particular technology might be useful, he tries it and if satisfied, continues to use it.

The summative evaluation will assess the impact of the CTTA communication intervention by measuring changes in awareness, knowledge, and use of an available appropriate technology, and changes in productivity. In addition, other factors affecting technology use such as markets, roads, and other institutional support systems, the climate, soil type, farm size and other environmental factors will be examined.

Evaluation Questions

The CTTA summative evaluation will focus on the following questions:

1. Can improvements in communication strategy increase use of available appropriate technology?
2. What institutional and situational changes are needed to make the strategy work?
3. Are there factors that are free of socio-economic bias that influence farmers' awareness, knowledge, and use of technology?
4. What are the characteristics of a technology or its components that can be successfully transferred using CTTA's approach?
5. Is awareness of technology related to knowledge of technology, and what factors affect progress from awareness to knowledge?
6. Is an increase in farmers' knowledge of the technology related to its use? What percentage of the increased use is due to increased knowledge? What other factors affect farmers' adoption of technology?
7. Does using the technology increase productivity? What percentage of this increase is due to increased use of the technology? What other factors affect increase in productivity?

Determining Evaluation Design

A major concern in designing a summative evaluation is to isolate the effects of the independent variables while controlling for other variables that may affect the outcome. For CTTA, some of the most important issues related to this concern are: yield fluctuations caused by climatic and institutional factors, need for control groups, defining the sampling frame, and explaining the "why" of changes that occur.

Longitudinal Study

Longitudinal studies help control for seasonal fluctuations occuring during the summative evaluation period. A baseline study is conducted to establish a starting point for CTTA's longitudinal comparisons. At the end of each cropping season, information is gathered on types of production techniques practiced during the year and their results. Data are collected from the same farmers each year of the study, and changes in practices and yields are compared with fluctuations in environmental and institutional factors to see if they might have contributed to the yearly fluctuations.

Control Group

Designation of a control group that does not receive any interventions helps to determine if an intervention has resulted in change. Three types of controls will be used in CTTA: 1) reflexive control, in which farmers serve as their own control; 2) statistical control, in which statistical procedures are used to hold certain variables constant; and 3) phased control where the intervention is initially limited to a small area and gradually expands into the entire project area. In such cases, groups that have not yet received the intervention are used as the control population for those who have.

Sampling Frame

Summative evaluation can either answer the question, "Did anything happen?", or it can estimate the magnitude and direction of change. The CTTA summative evaluation process seeks to identify the latter. This calls for a broadly representative sample which will include all of the sub-populations of farmers the project is trying to reach.

Adequate Explanations

Although the CTTA project uses primarily a quantitative approach in measuring and determining change, the results will not necessarily fully explain *why* some changes did or did not occur. To answer these questions, smaller discrete studies using qualitative research methods will be carried out to complement the quantitative study.

Summary

Although the methodology for evaluating agricultural communication interventions in developing countries is still evolving, the CTTA Project provides a useful model for describing the evaluation process as applied to an agricultural project. By carefully implementing the summative evaluation process and by adhering to the evaluation-variable model, the CTTA project seeks to identify those effects attributable to the communication strategy, and to assist the goal of increasing agricultural productivity. ■

Shakir Hussein is an evaluation specialist at Applied Communication Technology, the summative evaluation subcontractor to the CTTA Project.

1988 Agricultural Communicators Congress

Agricultural communicators in developing countries may be interested in attending or watching for reports that come out of the 1988 U.S. Agricultural Communicators Congress. Every four years U.S. agricultural communicators gather in Washington, D.C. to focus on the agricultural communication profession and to discuss national and international issues that affect the future of agriculture.

The Congress will be held from July 10-13, 1988 in downtown Washington, D.C., bringing together members of the American Agricultural Editors' Association; Agricultural Communicators in Education; Agricultural Relations Council; Cooperative Communicators Association; and the National Association of Farm Broadcasters. For program details and registration information write to: Donald N. Collins, National ACE Headquarters, 655 15th St., N.W., Suite 300, Washington, D.C. 20005, U.S.A.

Study of Rice Primer's Effectiveness Available from IRRI

The International Rice Research Institute (IRRI) has recently issued a Research Paper that details the results of a project that tested the effectiveness of a rice-growing Primer for farmers. The Primer is a picture-text combination of the hows and whys of improved techniques for lowland rice farming. It was published originally in English. Subsequently, IRRI blocked off the English text and made the publication available to copublishers who added their own language texts. The purpose of the research project that resulted in this Research Paper was to determine whether the publication worked well in the Philippine dialects of Tagalog and Hiligaynon, if the publication was appropriate for low-literate farmers, and how it could be improved.

For a copy of IRRI Research Paper #127, *The Effectiveness Among Farmers of* "A Farmer's Primer on Growing Rice" *in Two Philippine Dialects*, by V.L. Cabanilla and T.R. Hargrove, write to IRRI, P.O. Box 933, Manila, Philippines.

Integrating Video into Agricultural Training

by Kathy Alison

The use of video as a training tool in agricultural development projects has sometimes been considered a luxury. Critics claim that the technology is too sophisticated for "uneducated farmers" in many countries. However, video has been and continues to be used to improve the agricultural production skills of farmers and extension agents in such countries as Guatemala, Tanzania, and Portugal. In these countries, the video production component is an integral part of an agricultural production project rather than a luxury.

A Portugese Example

While not a developing country, Portugal experiences similar problems and constraints, particularly in its agricultural sector where outmoded techniques make it difficult for farmers to compete with their European counterparts.

To help farmers overcome these disadvantages, an extension video team has produced over thirty 10- to 15-minute agricultural training videos on subjects ranging from poultry and sheep production and building plastic silos, to grape production and the safe use of pesticides. Written materials accompany the videos to reinforce these messages.

The video team was organized by the Portuguese Ministry of Agriculture and the PROCALFER Project (*Programa de Calagem, Fertilizaçao, e Forragems* – Limestone, Fertilizer, and Forages Program). It is funded by the U.S. Agency for International Development (AID) and is being implemented by the U.S. Department of Agriculture (USDA).

The project's main focus is to improve agricultural productivity through the proper use of limestone and fertilizers. Supporting components of the project include transportation economics, sheep and goat production, extension outreach, research, and policy planning.

The video aspect was developed as part of the extension sub-project. The Ministry of Agriculture had already invested in some video production equipment and requested USDA to provide technical support and consultation to develop a production team within the Ministry to work with them on communication strategies, management skills, and production techniques.

The video production capability in Portugal is not limited to the central Ministry of Agriculture team in Lisbon. A second major production team is located in the north of Portugal, in Porto, which is part of the information staff of the Regional Directorate of Agriculture. These two teams coordinate their productions and distribute their materials throughout Portugal. Productions are filmed on 3/4-inch equipment and distributed on 1/2-inch VHS tapes.

Since many of the other agricultural regional offices have 1/2-inch video production capability as well, the central team in Lisbon has worked closely with them to coordinate their production activities. All audiovisual technicians within the Ministry of Agriculture have received training in production techniques.

Two teams, one from Lisbon and another from Porto, sharpened their professional skills with a five-week visit to the U.S. to observe video production facilities in the private sector, at USDA, and at land-grant universities throughout the country. This visit was planned and coordinated by a USDA consultant to assure that continuity and focus were maintained during their U.S. visit and after they returned to Portugal.

In Portugal, intensive training programs have been designed and implemented for extension workers who show the videos to farmers attending regional training centers. Video playback equipment, available in most of the regional training centers, was selected by the video production teams to ensure that all equipment is compatible.

Recent Developments

When Portugal becomes part of the European Economic Community (EEC), farmers will have access to EEC grants and loans to upgrade their agricultural production techniques and practices. The Minister of Agriculture requested the Lisbon broadcasting team to develop television programs to inform farmers how to apply for these loans and grants. Although there are still concerns about program length, content, and the frequency of broadcasts, the team is enthusiastic about using television for this purpose, because many farmers in Portugal have TV sets. For those who do not have their own sets, many of the small restaurants and bars do where farmers can watch the programs in the evenings.

Benefits

Thanks to the video sub-project, a cadre of video production and communication professionals is developing both in Lisbon and in the seven regional districts throughout Portugal. Earlier this year, the first Agricultural Communications meeting was held in Portugal with approximately 40 information directors, graphics, publications, and audiovisual technicians from the central and regional levels participating. Evaluations of the workshop showed a strong desire to continue these meetings as an opportunity to learn new approaches, to share ideas and strategies, and to develop a network of communication professionals.

It is the farmers of Portugal, however, who are the primary beneficiaries of this expanded use of video in agriculture. Videos provide farmers with the opportunity to see how a new technique works and how they can benefit from using it. Trainers can then develop new training programs based on feedback from farmers.

The Portugese experience demonstrates how a motivated production team with the right equipment and facilities; trainers with knowledge of how to use videos; and decision and policy makers who support the use of video, are all helping farmers to benefit from improved agricultural techniques. ■

Kathy Alison is an international training specialist with the International Training Division, Office of International Cooperation and Development, U.S. Department of Agriculture, Washington, D.C. 20250, U.S.A.

Microfiche of International Conference on Education Available

Documents submitted for the 40th session of the International Conference on Education, held December 2-11, 1986, are now available in microfiche form. There are 99 reports updating educational developments which have occurred in participating countries since the previous Conference. The special theme addressed in this session was improvement of secondary education: policies, objectives, structures, content, and methods.

To purchase these microfiches or to obtain a complete list of the documents available, please contact: Documentation and Information Unit, Unesco: IBE, P.O. Box 199, 1211 Geneva 20, Switzerland.

(**Laflin** *continued from page 1*)

All of the LRCN stations are successfully marketing their development information and local-language broadcasting services to relatively fragmented and small audiences, contradicting the long-held notion that radio must reach large audiences to justify its use.

Policy and Structure

Policy is informed by both national and local advisory groups. Ministry representatives from agriculture, health, and education meet with LRCN staff several times a year to discuss policy matters. There are also annual national and regional conferences to help develop a communications agenda for the coming year.

The LRCN Director has a cadre of senior advisers located at the rural sites who are responsible for all activities in the stations. The Chief of Programming and the Chief Engineer, based in Monrovia, are responsible for overall production and engineering functions, but have counterparts at each station. Field assistants at the stations report to the Chief of Development Services in Monrovia when carrying out network-wide research tasks, and to local station managers when dealing with community relations or local program research.

Producers are trained in simple research and evaluation techniques. Program evaluation is a multi-faceted, on-going process, from visits to villages to observe listening groups, to assessing letters from listeners, to visiting development agencies who have purchased LRCN air time to determine their assessment of the programming. A more formal survey may be prepared by the Research Coordinator to assess changes in knowledge or behavior.

Station managers and their Executive Producers are responsible for the daily operation of the regional stations – programming decisions, where and when to travel for on-site broadcasting, and evaluating the performance of program producers. LRCN recruited strong managers, people who were respected in their communities, to fill these crucial positions. They were trained first as managers and second as broadcasters. Reporting mechanisms and information management were regarded as key issues.

Designing a system that provided the quality of information that satisfied the headquarters staff but did not consume all the Managers' time required much ingenuity. A series of performance indicators have been developed, such as the number of new programs broadcast, or the number of health vs. agriculture programs that were aired, the number of hours in a particular language, etc. – to help assess overall station performance. In addition, each station sends sample tapes of a full day of programming to Monrovia for monitoring.

As demonstrated, the structure is not a simple hierarchy, but a matrix of overlapping responsibilities and functions. Network management focuses on the points of overlap, and is based on two factors: the degree of confidence colleagues have in each other, and the regularity and adequacy of communication between the physically dispersed units.

Cultivating Local Support

In broadcasting, the final arbiters are the listeners. They provide direct sponsorship by paying for messages and announcements. LRCN also must demonstrate to the development agencies that the broadcasting services they buy are effectively reaching their rural clients. Client participation and awareness of the network is achieved in numerous ways:

- local steering committees, comprised of influential members of the local community, advise each station;
- listening groups have been organized in towns and villages, up to twenty miles from the stations, in which programs are played to the groups in order to do formative evaluations. During these gatherings, local traditional music is recorded and better personal contact is forged with listeners;
- local volunteers have been trained as translators and announcers;
- community drama and music groups regularly perform in local languages;
- practitioners in the fields of health and agriculture advise LRCN on technical and social issues; and
- 35 professionals from local development agencies received a nine-month training course in broadcasting to increase the available pool of talent, and to keep their agencies apprised of the continuing value of radio.

Early signs of success are evident in the substantial number of letters and messages (60 to 70) that were received daily by the rural stations during the first year of broadcasting. There is also a growing number of requests from development agencies for broadcast training, such that it is becoming a continuous activity for the Network. LRCN also holds joint training programs with the University of Liberia.

Internally, the system is not without its problems. Daily use of a two-way radio between Monrovia and the rural stations has helped to respond quickly to problems that arise. Monrovia management staff frequently travel to the rural stations and spend a week or two working with local staff, monitoring local performance and developing what is still a young system. Concerns about funding cause stress within the entire system, but both regional stations and the central production unit have responded by continuing to aggressively seek sponsors to increase its resource base.

Has Decentralization Worked?

The decision to build a system of rural radio stations propelled LRCN toward decentralization. The immediacy of radio calls for immediate decisions to be made at the local level. The fact that the stations remain on the air – an achievement not to be taken lightly in rural Liberia – is proof, of a kind, that units within a decentralized system can operate efficiently. Further proof at the local level is that regional organizations (agricultural projects, hospitals and small clinics, local merchants) and national initiatives (the Expanded Program of Immunization, the Central Agricultural Research Institute, the National AIDS Committee, the World Health Organization, the Forest Development Authority, the Family Planning Association, and Agency for International Development projects) have bought network services, suggesting that LRCN's identity is as secure locally as it is nationally. Local agencies in particular are financially supporting their regional stations, as are local people who volunteer their time.

While the vigor of LRCN can be attributed to decentralization as well as to novelty, equally notable is the increased control public sector employees have over station operations which has resulted in greater job satisfaction and better job performance.

Conclusion

Localized communication is not a sector-specific function, but a service that should be integrated into all sectors. Radio is a low-cost medium that provides information, education, training, and market services to local communities. Services provided by development agencies are being used increasingly because of radio. LRCN is a model of decentralized local radio that development agencies in Liberia find valuable, and one that may have relevance to other countries as well. ■

Michael Laflin, Home Office Director of the Liberian Rural Communications Network Project, is Director of Communications at the Institute for International Research Inc., 6715 Whittier Ave., McLean, Virginia, 22101, U.S.A.

A New Center for the Development of Communication

The Centre for Telecommunications Development within the International Telecommunication Union (ITU) is expected to become operational soon. Established in July 1985, the Centre is mandated to strengthen and expand the scope of advisory services and technical support to developing countries to help remedy the imbalance in telecommunications distribution in the world.

To achieve this purpose the Centre will collect information on telecommunications policies and experience worldwide and disseminate it to developing countries to help them formulate policies for evolution of their own networks; offer administrative and financial advice on telecommunications developments; and provide specific assistance in such areas as preparation of project plans and specifications, manpower planning and training, management, and research and development.

For more information please contact: Centre for Telecommunications Development, ITU, Palais des Nations, CH-1211 Geneva 20, Switzerland.

A Communicator's Checklist

1 **Microcomputers and Their Applications for Developing Countries, Report of an Ad Hoc Panel on the Use of Microcomputers for Developing Countries**, BOSTID, Office of International Affairs, and National Research Council, (Boulder, Colorado: Westview Press, 1986) 216 pp.

This book consolidates the findings of the Advisory Committee on Technology Innovation, the Board on Science and Technology for International Development, the Office of International Affairs, and the National Research Council of the U.S. Government on the twin topics of microcomputers and microcomputer applications, both within the context of developing country environments.

Microcomputer technology continues to evolve at an amazing pace. In the December 1982 issue of *Scientific American*, my colleague, Hoo-min D. Toong and I observed, "If the aircraft industry had evolved as spectacularly as the computer industry over the past 25 years, a Boeing 767 would cost US$500 today, and would circle the globe in 20 minutes on five gallons of fuel. . . .Computational speed has increased by a factor of 200 in 25 years. In the same period, the cost, the energy consumption, and the size of computers of comparable power have decreased by a factor of 10,000." This rapid rate of progress has made it possible for today's microcomputers to offer better performance than the mainframe computers of the 1960s and the minicomputers of the 1970s.

By virtue of their high performance, broad applications, and low cost, microcomputers are ideally suited for use in developing country environments, especially in cases where funds are scarce. These microcomputers can be used either for supporting applications for the first time, or as cost-effective replacements for mainframes and minicomputers.

The above points are briefly discussed in several sections of this book. For example, Part I addresses "Microcomputers and Development Needs," and Part III deals with "Major Policy Issues and the Future." Finally, hardware and software issues are covered in the appendix.

Part II, "Examples of Sectoral Applications," is an excellent review of case studies drawn from four areas – agriculture, health, energy, and municipal management. This holds special relevance for top officials in developing countries, especially when read in conjunction with such specialized publications as *Present and Potential Uses of Informatics and Telematics in Health*, World Health Organization, November 1986.

Overall, this book presents an interesting discussion of a growing field. An attempt has been made to address the subject at a less technical level to be more easily understood by a wider readership, rather than covering topics in great technical depth. Generally, most books resulting from a cooperative effort such as this, tend to be somewhat disjointed with multiple islands of information, barely linked together. The coordinators and editors of this book have done a commendable job integrating the individual pieces into a cohesive volume. ■

Available in hardback for US$30 from: Westview Press, 5500 Central Avenue, Boulder, Colorado 80301, U.S.A.

Reviewed by Amar Gupta, Principal Research Associate, Sloan School of Management, Massachusetts Institute of Technology, Cambridge, Massachusetts, U.S.A. Dr. Gupta has worked on technology transfer issues in India, England, Switzerland, and the U.S.

2 **Intercultural Communication: A Perceptual Approach,** by Marshall R. Singer, (Englewood Cliffs, New Jersey: Prentice Hall, 1987) 258 pp.

For the professional involved in the international field, the occasional story of a wonderfully successful exchange never seems to occur with the same frequency as the horror stories of intercultural disasters, whether in the interpersonal, political, or business sphere. We all have collections of anecdotes of cultural insensitivity and breakdowns in communication.

While the boom in international business and travel has launched a new industry in culture-specific "how-to" books and audiovisual materials prepared to help the business person, tourist, or foreign student to successfully conduct business, tours, or study, highlighted with hundreds of anecdotes and so-called "survival skills," there has been remarkably little written for the serious student or working professional exploring the underlying principles that govern such interchanges.

Marshall Singer, from the University of Pittsburgh, has finally provided such an approach in his new book, *Intercultural Communications: A Perceptual Approach*. Singer proposes a conceptual model that underlies all intercultural communication, whether on the personal, group, national, or international level. He has done a supurb job of creating a framework complete with thought-provoking questions that can be used to explore communication patterns on a variety of levels. He points out that each individual is a member of a unique collection of groups and demonstrates what makes each individual culturally unique. He also shows why every communication is, to some degree, intercultural, and he discusses ways to make those communications more effective.

The author lays out a basic premise of four primary concepts: cultural and perceptual style; sense of identity; power relationships; and communication styles and goals; then he applies each to individuals, groups, and nations to show how using the concepts can improve communications at each level of analysis. Rather than providing answers, Singer suggest the questions that should be asked at each level of interaction to help the reader improve his or her communication effectiveness.

A particularly useful contribution is his exploration of the role of "power" to relationships and the impact that such influence can have on the communication process, intercultural or otherwise.

While designated as a text for college classes in intercultural communications, even the working professional who enjoys exploring process as well as content will find this a fascinating book. The language is clear and flows well. The material is organized effectively and each chapter has a useful summary of key concepts at its conclusion.

I accepted Singer's challenge to apply the questions to an actual situation, and used the framework to explore a recent group exchange in which I had participated. I was pleasantly surprised at the new insights gained and the valuable contribution this conceptual approach made to my own understanding and appreciation of what had transpired, and the opportunity it provided to take a new approach in some areas that had been roadblocks to effective communication. I suspect that this will be one of those unusually practical professional books that I will return to periodically to gain fresh insights into my own communication style and approach.

While the book is unlikely to be stuffed into the flightbag of a foreign-bound tourist, for the serious student of communication, *Intercultural Communication: A Perceptual Approach* makes a major contribution to our understanding of the essential elements of effective communication across as well as within cultures, and as such, is a valuable addition to the field. ■

Available in paperback for US$16.95 from: Prentice-Hall, Inc. Englewood Cliffs, New Jersey 07632, U.S.A.

Reviewed by Katherine Boswell, Program Officer at the Academy for Educational Development, Washington, D.C., U.S.A.

A Caravan of Videos in Haiti

by Andrew Curtin

When President-for-life Jean Claude (Baby Doc) Duvalier fled Haiti on February 7, 1986, the political barriers to the free flow of information left with him. The Ministry of the Interior no longer requires a letter of permission to conduct business in the provinces, and there are no travel restrictions within the country. Despite these new liberties and the growth of news and information services, rural Haitians remain critically isolated from access to timely and important information because of the mountainous terrain, the lack of electric power, and widespread illiteracy. Recently, however, a private enterprise effort that applies video technology to the dissemination of social messages has made significant inroads into rural Haitian isolation.

Even before the fall of the Duvalier regime, Claude Mancuso, a Port-au-Prince television producer, had begun to search for a reliable means of showing audiovisuals in rural communities throughout Haiti. The United States Information Agency had asked him to produce a tape warning rural Haitians of the danger and futility of attempting the illegal passage between Haiti and Florida. It immediately became apparent that there was no way to reach a vast majority of the intended audience.

As early as May 1985, Mancuso's research along with feedback he had received from several Haiti-based assistance organizations and the local private sector indicated that mobile video projection units would be an efficient and cost effective means of disseminating information on social issues such as health, agriculture, family planning, education, and disaster prevention.

Mancuso's first opportunity to test these findings came shortly after the early 1986 departure of the Duvalier family from Haiti. He equipped his own four-wheel drive vehicle with a single-tube video projection system, sound reinforcement equipment, a power generator, a VCR, and a large white sheet. He set out with his first *Video Karavan* (Creole spelling) in July 1986 for the isolated Northwestern province.

Even though the then-outdated "boat people" production was not shown in the villages, reception to his other videos was immediately positive. People were enthusiastic because admission was free and the videos contained information and entertainment that rural residents appreciated; they also appreciated the nonpolitical or nonreligious nature of the videos.

Mancuso's original idea was to provide a shared delivery system for the Haitian government and for non-governmental agencies that would reach the rural population. Since, at that time, there was no financial support from the Haitian government or from international funding organizations, it was necessary to accept commercial sponsors to keep the *Karavan* on the road. This set the stage for a mix of commercially- and socially-oriented videos that continues today.

Sponsors are charged fees ranging from US$150 per month for 60 seconds to US$500 per month for 30 minutes of time to have their videos shown; nonprofit organizations pay somewhat less than commercial sponsors. Each video is played approximately 20 times per month and the sponsor receives copies of the daily log sheets.

Noncommercial Videos

An example of the types of videos sponsored by nonprofit organizations comes from CARE which has been in Haiti for 25 years providing food delivery systems for school nutrition programs. Because of this long-standing affiliation with schools, CARE was identified with the Duvalier government, which resulted in several CARE warehouses being pillaged and their trucks being stoned. CARE needed to inform people in the trouble areas that it was not associated with the old political system and that the food they transport is intended for children.

Mancuso Productions was commissioned to make a Creole-language package of short information pieces about CARE's worldwide services – its reforestation programs, its potable water projects, and its school nutrition programs. This videotape was also integrated into a larger CARE communication strategy that included in-village training and seminars for their community workers. The response to and acceptance of CARE in the communities served by the *Karavan* was far more positive than in villages not reached by them before the arrival of the training staff; considerable time was saved because CARE did not first have to introduce themselves to the community.

Commercial Videos

While some information videos have been sponsored by CARE and the Haitian government, to date, most have been of a commercial nature, sponsored by private companies such as Shell, Colgate, Mitsubishi, and Pepsi Cola. Since most viewers in Haiti have little if any disposable income, sponsors of the commercial videos shown by the *Karavan* do not attempt to differentiate their products from competing brands; instead, they show the importance of the product or show the impact of their corporate presence upon the health and well-being of Haitians. Colgate, for instance, sponsors an animated video on the prevention of tooth decay, mentioning its toothpaste only briefly at the end. Shell Oil Corporation has a longer piece showing the importance of trees and forests to Haiti.

Shown along with the commercially- and socially-oriented videos are short entertainment features such as Haitian music, circus arts, comedy skits, and folk dancing, all of which have been produced by Mancuso Productions. All videos are in Haitian Creole.

A Typical Schedule

Today, with three *Karavans* serving Haiti's nine provinces, it takes about six months to cover the entire country; then the cycle is repeated. A typical visit starts when the two technicians assigned to each vehicle arrive at the designated community, meet with local officials or clergy, and select a suitable viewing location. Once the site is determined, they drive around the area to announce the evening schedule. At sundown the images are projected against a white sheet hung between two trees or against a white wall; the generator is muffled and separated from the viewing area. According to daily log reports from field technicians, the *Video Karavan* has attained audiences of over 2,500 people at one showing, the average being closer to 800 per showing.

Videos are carefully selected for an evening's viewing to prevent the audience from receiving conflicting messages. That is, commercial videos are selected so they do not promote products that in some way discredit information being presented in the noncommercial videos.

The Next Step

While villagers eagerly anticipate the arrival of and attentively watch the videos, their ultimate impact has not yet been considered. Although Haiti's *Video Karavan* is developing into an efficient information delivery system, it does not routinely pretest the audience to measure comprehension or to detect behavioral change as CARE did when it surveyed its field trainees. There are plans, however, to pretest a video that has been sponsored by a health group that promotes breastfeeding and will be carried on the *Karavan* at a later date.

In the future, a forestry technician may accompany a *Video Karavan* to distribute free seedlings to those who view a video on how to plant fast-growing trees. A similar approach could be used for vaccination programs, family planning information, and a variety of agricultural topics.

Other possible applications include a seaworthy *Karavan* to serve the many coastal villages, and *Karavans* dedicated exclusively to science and health information for rural schools. More immediately, however, the goal is to place a *Karavan* in each of Haiti's nine provinces, which would mean every six months nearly one million people would have access to videos that not only expand their knowledge base, but introduce much-needed entertainment and stimulation into their daily lives. ■

For more information contact: Mr. Claude Mancuso, Mancuso Productions, National Shopping Center, Delmas No. 48B Third Floor, Port-au-Prince, Haiti.

Andrew Curtin is a communications consultant working on a civic education project in Haiti.

(**Verzosa** *continued from page 7*)

4. ***Will mothers have access to the DMD product?***

Mothers must have access, during and after diarrhea episodes, to the tangible product and cooking fuel; to time in order to gather the ingredients, prepare the recipe, and feed the child; and to information, whether it be from printed matter or remembering having heard the recipe over the radio.

5. ***What messages about the DMD product will be acceptable and will result in the desired behavior?***

Positioning the product in the consumer's mind is a key element in a successful promotion campaign. What is the product for and what key consumer benefit will it provide? Does the product provide the solution to the problem as perceived by the consumer?

Once the primary message is defined, the communication team can create materials to disseminate it in different ways. Radio messages can be used to motivate and increase awareness about the problem. Print materials can be designed for nonliterate groups and pretested with mothers to ensure comprehension. Face-to-face communication interventions such as cooking demonstrations can be designed not only as the primary teaching mechanism, but also to generate public interest and awareness of the problem of nutrition and diarrhea in young children.

In summary, the communication and social marketing task is to manage behavior change. To do that task well, there must be a good understanding of the low-income consumer. Focusing product introduction efforts on the consumer is a basic principle that guides successful marketing and promotion efforts. In the final analysis, it is the consumer who decides to accept or to reject a new behavior, concept, or product. ■

For information about the Dietary Management of Diarrhea Project contact: Dr. Kenneth Brown, The Johns Hopkins University, School of Hygiene and Public Health, 615 N. Wolfe Street, Room 2041, Baltimore, Maryland 21205, U.S.A.

Cecilia Verzosa is a senior communication specialist with the HEALTHCOM Project and project director for DMD at the Academy for Educational Development.

PTC '88 Tenth Annual Conference

"Telecommunications and Pacific Development: Alternatives for the Next Decade" is the theme of the tenth annual Pacific Telecommunications Conference scheduled for February 15-18, 1988, to be held in Honolulu, Hawaii.

Spanning two decades of telecommunications development, 1979-1998, PTC'88 will examine past accomplishments and changes, current facilities and services, and future trends, requirements, and issues.

For further information about the conference, write to: PTC '88, 1110 University Avenue, Suite 308, Honolulu, Hawaii 96826, U.S.A.

Audiotheques Rurales in Mali

by William Amt

The oral tradition is a form of communication that is not often seriously considered when information transfer projects are being planned. In Mali, however, where 80 percent of the adult population is illiterate, it is still commonly used to transfer knowledge from generation to generation. Aware of the importance of the oral tradition to its society, the Malien Ministry of Sports, Arts, and Culture, with assistance from the United Nations Development Program (UNDP), and Unesco, organized a project that capitalizes on the potential of oral transmission as a development medium.

The *Audiotheques Rurales* (Rural Audiocassette Libraries) project has provided two tape players/recorders, educational *audiotheques* and batteries to 56 villages across Mali. Each library contains some 60 tapes in the local language, each tape related to a different theme that is relevant to the everyday lives of the listeners. Subjects covered include: 1) development technologies useful for improving health and agricultural practices; 2) civil obligations, such as the purpose of taxation and the importance of protecting wildlife; 3) traditional know-how, such as herbal remedies and well-digging methods; and 4) traditional stories, history, songs, and poetry which are usually allegorical and discuss such issues as relations between youths and the elderly. The tapes raise questions that stimulate group discussions about issues important to the village and, accordingly, how to improve traditional practices.

Not only is the local heritage preserved in this way, it is also an effective, modified use of traditional oral information channels since villages share ideas through the project network.

Tape Production

Villagers administer the project themselves. Each village elects a man and a woman as facilitators – tape librarians who maintain the collection and organize listening sessions. Sessions are held two to five times per week, with separate sessions for men, women, and children. An oral knowledge committee is established in the village, comprised of local leaders and such technically skilled people as midwives and extension agents. Each field agent trains representatives from five villages and advises them in the selection of appropriate tapes for their particular tape library. In turn, the oral knowledge committee tapes the songs, fables, local history, and other indigenous knowledge of their own community, to add to the project's collection.

Project personnel in the central office in Bamako, the capital, collect the recordings and develop the educational tapes, using these locally produced materials, interspersed with music and information pieces such as new farming techniques or health tips. The tapes are then translated into five local languages and written transcriptions are prepared. Numerous agricultural, health, and other social services provide the project's central office with information to include in the tapes as well. Ideas for new tapes are initiated from the central office which also serves as a documentation center.

The audiocassette libraries are not designed to replace conventional methods of information dissemination such as visits and demonstrations by extension agents or training sessions; rather, they supplement these activities, making them more effective through repetition and allowing people to learn at their own pace.

The cost of the project is modest. The UNDP committed US$594,000 for five and one-half years, covering expenses for such items as cassette players for each village, recording and copying equipment for the central office, and motorbikes and satchels for the project's field agents. Several villages have established communal gardens to pay for batteries for the cassette player/recorders.

Since its inception in 1982, the project has provided villages across Mali with a regular supply of *audiotheques* and they have become an important part of village life. A participatory evaluation revealed that villagers view *audiotheques* as useful "schools," that listening and discussion groups foster social unity, and that the self-managing nature of the project has encouraged villagers to heed messages more than if they were passive recipients of information.

The concept of *Audiotheques Rurales* can be adapted in other countries where the oral tradition serves as an important communication medium. The project extends the villagers' traditional knowledge base instead of overlaying it with unfamiliar ideas. Villagers appreciate the participatory nature of the tapes because ideas can easily be shared with others in a familiar and entertaining way, offering them the opportunity to teach each other what life has taught them. ■

For more information contact the: Resident Representative, United Nations Development Programme, Boite Postale 120, Bamako, Mali.

William Amt, formerly the Program Assistant in the Clearinghouse, is now an Information Assistant with the PRITECH Project in Arlington, Virginia, U.S.A.

TUNING IN

Radio Boosts Immunization Campaign in Swaziland

by Bongani Magongo and Vicki S. Freimuth

Swaziland, like many other developing countries, has experienced difficulties in persuading parents to have their children fully protected with the required five immunizations in the first year of life. To overcome the reluctance of parents to complete the full set of immunizations, the Swaziland Ministry of Health recently undertook a novel experiment using radio to teach children about immunization and to encourage children to teach their parents about the need to have siblings immunized. The positive results of this project supports the growing evidence that interactive radio can be used in many different environments to respond to a wide variety of needs.

The Swaziland Expanded Program of Immunization (EPI) School Health Radio Program is sponsored by the Centre for Childhood Communicable Diseases and HEALTHCOM, an Agency for International Development (AID) project. Assistance was also given by the Swaziland Development Communications Project and the Ohio University Teacher Training Project – all funded by AID.

School Selection

The project was carried out in sixteen schools, involving more than 2,000 pupils in grades five and six. Two rural and two urban schools were selected from each of the four regions of the kingdom. One half of the schools received the radio programs (experimental schools) and the other half did not (control schools).

We made our final selection of schools with the help of a national survey based on the following criteria:

1. Did the school have an operating radio or was it willing to commit to obtaining a working radio in time for the regular broadcasts to schools?
2. Was the school able to receive the English Channel of the Swaziland Broadcasting Service? (Some parts of the country experience considerable difficulty in receiving this channel.)
3. Was the school enthusiastic about participating in an experimental program related to a health subject?
4. Were there two urban and rural schools each available in the region?

While most schools had or were willing to obtain radios, many expressed concern about difficulty in picking up the English broadcasting channel. We decided that where there was considerable difficulty with reception, the project would provide cassettes of the programs.

Radio Lessons

A one-week planning session was held with school nurses and health communicators to determine the purpose and objectives of the series, to plan the content of the messages, and to select a program format. It was agreed that each program would deal with a specific aspect of immunization, but would also reinforce the overall message. Some of the topics were: "The Four Good Health Habits," "Immunization is the Only Protection Against These Diseases Which Can Kill and Cripple Children," "The Names of the Six Killer Diseases," and "The Importance of Telling Your Family About Immunization."

An "immunization song" was composed and then played at the beginning and end of each program to reinforce the message. This song, sung in English at the beginning and in SiSwati (the local language) at the end, covered all the elements that were featured in the eight programs.

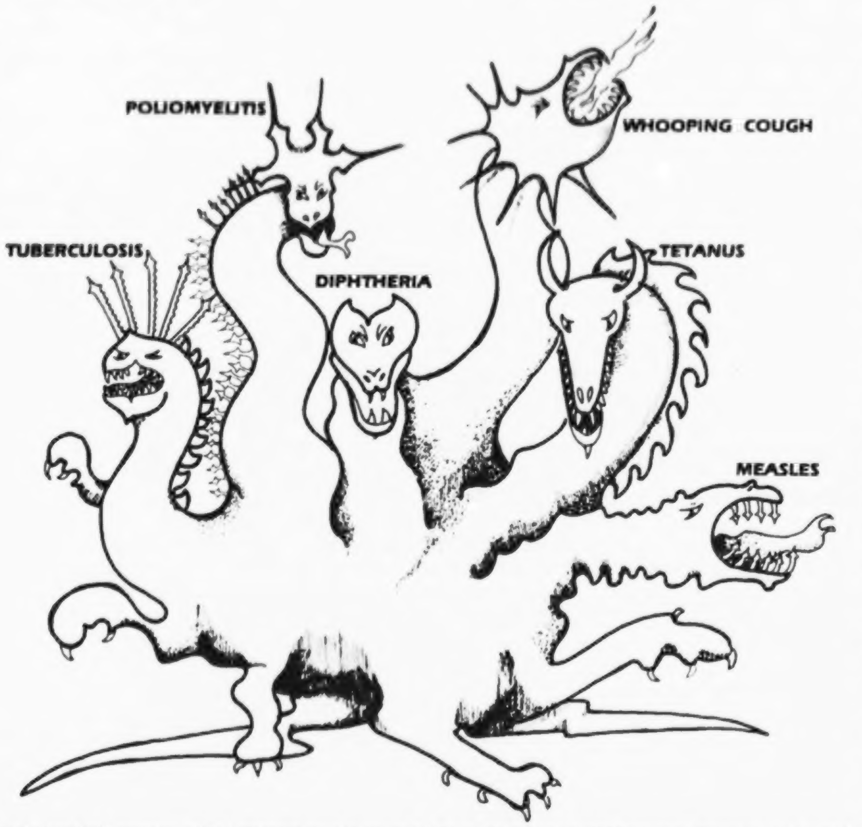
Each 15-minute radio program followed the same format: first came the opening with the immunization song, followed by an introduction of the topic, skill teaching and interactive skill drill, story time, a physical activity (song or game related to the topic), an interactive workbook activity, assignment of homework, a summary, and finally closing with the song.

The children were invited to participate in the singing, the physical activities, and the workbook exercises. Two teachers – a man and a woman – were selected as actors for the radio lessons so that children would come to identify one who instructed and questioned them, and another who provided the answers. For the story segment, a special narrator was introduced – Uncle Elijah, whom the children quickly learned to look forward to.

The advantages of using a regular format have been demonstrated in other interactive radio programs; the main advantage being that children quickly "learn their way around" the program and anticipate each of the segments.

We pretested a program and a workbook sample in a number of schools before proceeding with the final production of the program. Each program was broadcast twice a week to allow for differences in school time tables, and because reception in some areas was better on some days than on others.

(*Continued on page 12*)



This six-headed monster, which appears on the cover of the workbook that children took home to color and share with their families, represents the killer diseases for which. inoculations are available – tuberculosis, poliomyelitis, diphtheria, whooping cough, tetanus, and measles. (Prepared by graphic artist, Beatrice Miller)

Wearing the Message in Niger

by Anne Kreutz

For many years, Niger has had a policy of using the mass media to promote national development. Both radio and television are used regularly to promote development initiatives, and the government has provided many villages with community television sets to receive these messages. But, there are other ways to promote national development that take neither the training nor the time, the skill nor the money called for in mass media campaigns. Message-bearing T-shirts, for instance, are used worldwide to convey information.

Carrying this practical medium a step further, Niger, like other African countries, prints development messages on *pagnes* – the colorful pieces of cloth from which Nigerien women fashion traditional skirts. From the smallest village to the capital city of Niamey, women can be seen wearing *pagnes;* even office workers in Niamey wear them. They can be purchased in urban stores as well as in the most remote village marketplaces.

A development project that promotes an improved cooking stove has used the *pagne* for some time to "advertise" its product. This particular *pagne* depicts a woman using the wood-conserving stove accompanied by the message: "With my improved stove, I conserve wood for a green Niger."

More recently, the government printed a *pagne* to coincide with a nationwide campaign to control the mouse population. During the past rainy season, mice dug up recently-sown millet plots throughout the countryside, damaging the crop and greatly reducing yields. This invasion of scavenger mice continued into the dry season as many villagers started their next farming year.

The government designated a day when all farmers were asked to help eliminate as many mice as possible. To advertise the campaign, a *pagne* was printed with a mouse theme on it showing someone with a club holding three dead mice by the tail, accompanied by the words, *A Kasbe* or "kill" in Hausa, the local language.

Another *pagne* promotes off-season gardening, a policy the government strongly encourages throughout the country as a post-harvest activity. The outgrowth of this initiative can be seen in marketplaces everywhere: plentiful supplies of tomatoes, lettuce, onions, carrots, peppers, eggplant, and squash. You will find women wearing a *pagne* depicting just that – lots of colorful vegetables.

While there has not been an evaluation survey to determine if the *pagnes* have had a direct impact, they certainly receive attention whenever they are worn and women flock to buy them when a new one appears on the market.

When I wear my "mice campaign" *pagne* to hoe in the local community garden, I can hear children commenting on the "big hand that holds the club," poised to attack mice. While anecdotal in nature, it is apparent that even young children are being reached with this practical, popular, and highly visible means of communication. ■

Anne Kreutz is a Peace Corps Volunteer in Niger, where she works in an agricultural research station.

(**Magongo** *continued from page 11*)

The Workbook

The workbook was a vital element of this project because it was through it that we hoped to reach the parents. Children were encouraged to take the workbook home to do their homework and to share it with their parents.

From the beginning, the artist and designer of the workbook cooperated closely with the scriptwriters, allowing the artist to contribute to the radio programs and enhancing the compatibility of the radio programs with the workbook.

The book is filled with simple black and white illustrations that children are encouraged to color and it was printed on paper that would reproduce well on a simple copying machine. Each radio lesson has a double-page spread and every lesson follows the same format. The cover of the workbook is illustrated with a "six-headed monster" that was featured in the first radio story – each of the heads representing one of the killer diseases. (See illustration) There is also a place for the student to write his or her name, grade, and school.

Evaluating Children's Learning

A 26-point quiz was developed to measure all of the objectives of the radio programs. This pretest was administered in the sixteen participating schools before any of the radio programs were aired. The experimental schools averaged 4.57 correct responses and the control schools 4.21 out of the total, indicating that both groups had comparably low levels of knowledge about immunization before hearing the radio programs.

After the broadcasts, we administered a posttest using the same pretest questions. The experimental schools showed a significant increase in knowledge with an average score of 20.05 out of 26 while the control schools averaged only 5.80 out of 26, indicating the potential of a well-planned, integrated radio/workbook approach directed at and designed for a specific audience.

This phase of the experiment further demonstrates how locally produced radio materials and the interactive radio methodology can be used to successfully teach children in developing countries. In the past, Swaziland relied heavily on imported radio programs where neither the voices nor the content was familiar to Swazi children.

We also learned the value of having the artist and the scriptwriters work together from the start, instead of waiting until the scripts are written to consult the artist.

Evaluating Mothers' Learning

During the second phase of the evaluation, we interviewed mothers to see if the school children were relaying the immunization information to them, and to determine if mothers were acting on that knowledge and immunizing their young children. One hundred thirty-two mothers of rural and urban school children were selected from the four control and experimental schools. The mothers came to the schools where Swazi interviewers conducted the questionnaire.

The results indicated only minor differences between the two groups of mothers. Mothers from the experimental schools appeared to be more knowledgeable about some of the topics discussed in the schools, and, as we expected, were much more likely to have seen the workbook, know where it came from, and what it contained. However, a total of only 20 percent of the experimental mothers reported being aware of the workbook, indicating a low overall impact. Although some children may not have taken the workbook home to show their parents, 44 percent in the experimental group reported they had talked to their mothers about immunization and 22 percent reported they had talked to other family members as well.

During the final evaluation phase, immunization records will be checked at the clinics to see if parents from the experimental groups have immunized their children more frequently than have parents from the control groups.

As project evaluation continues, earlier findings are already affecting program design. For example, because of the poor transfer of knowledge from children to parents, the revised workbook will include some activities that will require mothers' involvement.

A replica of an immunization card will be added to the workbook so that mothers will have to help their children complete it for other family members. The cards can then be checked by the teachers or school nurses who will contact mothers who have not taken their children in for immunizations.

Results from the Swaziland Expanded Program of Immunization School Health Radio Program add to the growing pool of evidence that the interactive radio methodology can be a powerful tool when used in schools to support health education activities. ■

For further information on this campaign write to: HEALTHCOM, Academy for Educational Development, 1255 Twenty-third St., N.W., Washington, D.C. 20037, U.S.A.

Bongani Magongo, a health educator with the Ministry of Health in Swaziland, has worked on several media campaigns for health education.

Dr. Freimuth is director of the Health Communication Program and Associate Professor in the Department of Communication Arts and Theater at the University of Maryland, College Park, Maryland, U.S.A. She was a consultant to this project.

Alternative Energy for Radio Stations

by K. Dean Stephens

Rural community radio projects in developing countries are often presented with technical challenges wholly distinct from broadcast operations in city and developed country environments. By their nature, the rural development projects that are often home to rural radio projects usually are not within easy access to technical assistance, telephones, or power lines. Even where available, the electrical energy necessary for radio station operation is all too often unstable and erratic. Conventional remedies such as substation connection to high voltage transmission lines are inordinately expensive, while the budgets of such stations are usually very limited. These challenges exist to a greater or lesser extent at every Baha'i radio complex in the developing world, with solutions constantly being sought and incorporated. (See *DCR* Nos. 40, 42, 44, and 54 for other Baha'i radio activities.)

Stations in Latin American

In Panama, commercial electricity is available intermittently at the principal Radio Baha'i station in Boca del Monte, and is totally lacking at the remote station site in the Guaymi Indian Cultural Center in Soloy. However, Panama receives more than ample sunlight even during the rainy season, making the stations an ideal candidate for solar power.

At the Boca del Monte 1kW radio station, six 30-watt solar panels are mounted on the roof, constantly charging a bank of heavy-duty six-volt batteries in series during daylight hours. One 12-volt supply is wired to a studio unit which includes turntables, mixer, microphones and cassette players. Other taps from the battery bank power a 25-watt standby transmitter to back the 1kW unit in the event of power failure.

The Soloy studio is located in the heart of the Guaymi reserve, a grueling two-hour jeep drive into the mountains north of Boca del Monte. A diesel generator normally powers the cultural center complex, but the radio studio in the Center is equipped with a solar-charged battery backup system as well. The cost of the entire alternate solar energy package, including seven solar panels, standby transmitter, two studios, fans and lighting, amounted to less than US$3000. Considering that solar panels have an average lifespan of 20 years, the transmitter at least 10, and studio equipment and batteries five years, the investment is readily justified – in the lowered annual costs of electricity, in the many services cheaply and efficiently powered by this system, and in having power available when the main source fails.

In Peru, *Radio Baha'i del Lago Titicaca* is not reached by commercial power, and normally relies on a 7kW diesel generator for electricity. Around the station are five other buildings, including a teaching institute, dormitories, and two staff cottages, all of which receive energy from a bank of 18 batteries charged by a 2kW wind generator which harnesses the morning and evening air currents that blow across Lake Titicaca. In the event of generator failure, the battery bank can power a 100-watt standby transmitter for a six- to eight-hour broadcast day for a week, or indefinitely maintain a reduced schedule using power generated from changes in wind direction.

Another example of appropriate technology in action at the station is a unique, locally built antenna utilizing a grounded, half-size tower design to channel the broadcast signal to communities around the lake basin with minimum loss. The tower's highest guy wires are "hot," being electrically connected to the top of the structure. These run a distance equal to the 40-meter height of the tower before being broken by insulators, effectively doubling the electrical length of the antenna. The tower not only costs a fraction of its conventional 80-meter, base-insulated counterpart, but also performs superbly as well in the lake environment, penetrating communities on the far Bolivian shores of Lake Titicaca with strength and clarity rivaling nearby 5kW stations.

African Example

To date, the most ambitious alternate energy undertaking has been in Africa, at Radio Baha'i Liberia (ELRB) near Monrovia. Commercial power exists in the area, but it is intermittent, and off more than on toward the end of the dry season when the hydroelectric reserve runs short. On the other hand, the dry season is a period of maximum sunshine there, making solar energy a logical choice for standby power. On site, ten solar panels of 36 watts each charge a similar number of heavy duty batteries to provide power for studios, 400-watt emergency transmitter, lighting, and ventilation. At the time of ELRB's first transmissions on December 5, 1986, a Liberian government official remarked that the station would probably serve as a model of alternate energy utilization for all of West Africa.

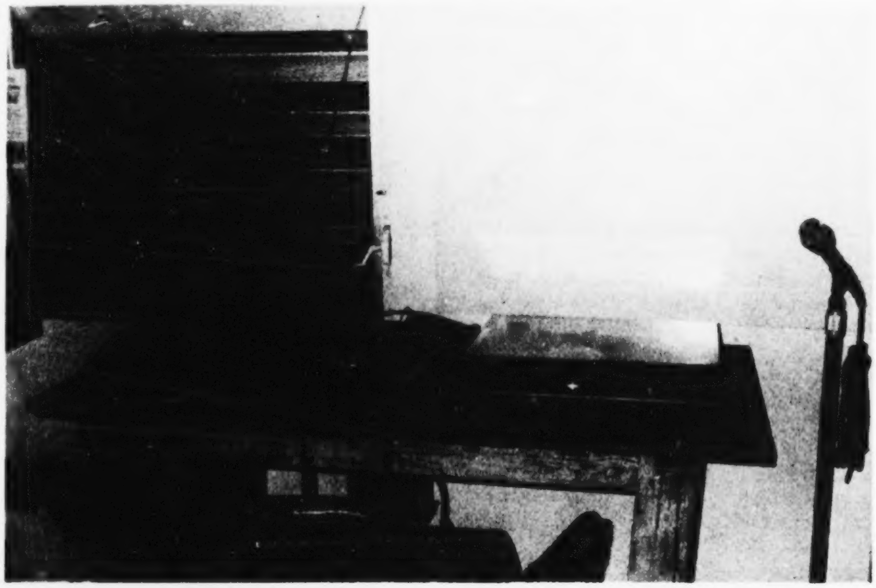
Energy-Independent "Village Radio"

A prototype solar-charged, battery-powered radio broadcast station for local community service has been developed and is ready for field testing. (See photo) Included in this "Village Radio" package is a three- to five-watt transmitter with a range of five to ten miles, depending on terrain and frequency. The package comes complete with a 12-volt studio. In addition to the standard operating equipment are antenna wire and a tuning unit, battery cables, spare parts, and portable cassette recorders for interviewing and gathering news of community interest, music, and folklore indigenous to the area. "Village Radio's" power source is a single solar panel, rated between 20 and 40 watts, depending on local weather and desired broadcast schedule.

By harnessing solar and wind energy, Baha'i radio stations stay on the air during power shortages and emergencies, providing lighting for institutes and staff housing and in the process becoming showcases of appropriate technology to the population they serve. An ultimate goal of development communication is, thereby, achieved – improving the daily lives of people in Third World countries. ■

For further information contact: K. Dean Stephens, HC 02, Box 14765, Arecibo, Puerto Rico 00612, U.S.A.

Mr. Stephens has served as technical advisor to the Baha'i World Centre since 1974. He has been involved in the planning, engineering and installation of Baha'i radio station throughout the world.



Shown is a village radio kit containing: (l-r) transmitter with antenna tuning units stacked on top, control microphone, two cassette players, five-channel mixer, headphones, DC servo turntable, and studio microphone.

On File at ERIC

By Barbara Minor

Documents recently entered in the ERIC (Educational Resources Information Center) files include an overview of computer education in Asia and the Pacific; the proceedings of a regional workshop on developing materials for the newly literate; reports on the use of packet-switching networks for distance education, and instructional technology research in Latin America. All of these documents are available in microfiche and four in paper copy as well from the ERIC Document Reproduction Service (EDRS), 3900 Wheeler Ave., Alexandria, Virginia, 22304, U.S.A. Be sure to include the ED number and payment in U.S. funds for the price listed plus shipping. Shipping costs can be calculated on the basis of three microfiche per ounce and 75 microfiche or pages of paper copy per pound.

● Anderson, Jonathan and others. *Developing Computer Use in Education: Guidelines, Trends and Issues*. 1986, 128pp. (ED 278 356)

Designed to provide educational policymakers and decision-makers with a basis for establishing guidelines for developing education programs, this report presents an overview of trends and issues in computer education in the countries of the Asia and Pacific region. The impact of computers on society is described, as well as the more recent impact of the microcomputer on classrooms in the region. Likely future developments in computing are discussed, together with the need for research on the effectiveness of computer instruction and how best to introduce computer use in education. Policy issues considered include the relationship of schools to society, equity of access to information, security and privacy, ergonomic and health factors, and computer awareness in the broader community. Hardware considerations are also discussed, including evaluation and selection, costs, site preparation, maintenance, local requirements, special features, and insurance. Various instructional and management applications of computers and the need for the development of appropriate software are considered, as well as the need for both preservice and inservice education for teachers. Curriculum requirements at the school level, postsecondary or tertiary level, and for nonformal education are also examined. Discussion of key issues to be considered in developing a national policy on computer education and an examination of new demands being made on literacy teaching conclude the report. Twenty-five references and a glossary of computer terms are appended. This Unesco report is based on discussions held at an Experts Planning Meeting on the Use of Computers in Education that was held in Bangkok, Thailand, in December 1985. Available from EDRS in microfiche only for 78¢.

● *Preparation and Field-Testing of Materials for Neo-Literates. Final Report. Proceedings of the Regional Workshop on the Preparation of Literacy Follow-Up Materials in Asia and the Pacific* (Chiangmai, Thailand, October 3-12, 1984). 1985, 116pp. (ED 278 374)

This workshop on the preparation of materials for the newly-literate in Asia and the Pacific was designed to train participants in the development, production (including design and illustration), distribution, and utilization of neoliteracy materials relevant to the needs of rural people. Workshop activities included: 1) discussions on methods of developing follow-up materials, the development of prototype materials, examination of materials prepared under the Asian/Pacific Joint Production Programme (AJP), and the development of a process for adapting these materials to meet local needs; 2) fieldwork in which four working groups of participants studied the needs of different villages, developed prototype materials, and field tested both their own and AJP materials; and 3) the development of draft national follow-up activity programs. Reports from the working groups include descriptions of their activities and the final products, which include a booklet, a poster and a serial poster, a radio program and two slide kits (scripts are provided), and a card game. A guide for the use of 1984 AJP materials and sample materials are included in this report, as well as a national follow-up activity plan for each of the countries represented. Appended materials include general information on the workshop, the agenda, a participant list, summaries of country reports presented by participants, and the texts of seven addresses presented at the inaugural session of the workshop. This Unesco report is available from EDRS in microfiche only for 78¢.

● Castro, Angela and Stirzaker, Lee. *The Use of AUSTPAC at Deakin University for Distance Education. Computer Communications Working Group Report No. 1*. 1986, 29pp. (ED 275 306)

This paper discusses Australia's two packet-switching networks, AUSTPAC and MIDAS, which are used for data transmissions with computers located within Australia or between overseas destinations. Although the facilities of both are similar, a comparison of their services based on traffic volume, connection, registration, and rental charges is made for the benefit of those unacquainted with technical and communication terms. AUSTPAC is the major focus of this paper, which discusses Deakin University's preference for this system to provide low-cost database searches for students, and provides suggestions for the management functions for its implementation. Also discussed are an AUSTPAC link-up between Deakin and the Open University (OU) in the United Kingdom for teaching master courses, use of electronic mail and other administrative functions, use of videotext systems for general information dissemination, and the design of and access to computerized research and bibliographic databases; the AUSTPAC billing software and plans for future computer facilities for staff and student access; general procedures for accessing AUSTPAC; an explanation of basic concepts and technical aspects of AUSTPAC's Packet Assembler/Disassembly (PAD) facility for packet-switching; variables for successful use of AUSTPAC; problems encountered in the 1985 AUSTPAC trials; computer-mediated communications and educational use; and staff and student development in the use of computer technology. Several tables are provided for illustrative purposes. Available from EDRS in microfiche for 78¢ or in paper copy for US$3.70.

● Chadwick, Clifton B. *Instructional Technology Research in Latin America*. 1986, 19pp. (ED 276 421)

The broad fields of educational technology and research activities in the more limited area of instructional technology in Latin America are examined in this paper. Research studies, the current situation, and research needs are reviewed briefly for each of the following areas: distance education; microcomputers; educational radio; learning strategies and study habits; instructional and text design; problem areas; behavioral objectives; democratization; student role; cognitive styles; and the effectiveness of educational technology in terms of its utility for educational systems in Latin America. Transfer and implementation studies are noted as being significant innovations in education improvement in Latin America, as well as the importance of valuing the ideas, beliefs, interests, and role of the recipients of these innovations to incease their participation in critical decisions and respond to their cognitive styles and interests. Most of the 50 references listed are in Spanish. Available from EDRS in microfiche for 78¢ or in paper copy for US$1.85. ■

Barbara Minor is Publications Coordinator at the ERIC Clearinghouse on Information Resources, Syracuse University, Syracuse, New York, USA.

A Directory of Development Journalists

An *International Directory of Development Journalists* has been published by *Development Forum*, a UN publication. The directory contains a composite listing of journalists' names; a subject and region cross-reference grid; professional data of individual journalists; professional journalists' organizations; schools of journalism and mass communication; radio stations that broadcast social and economic programs; development-oriented news and feature services and news agencies; information services of the UN and its specialized agencies; and a list of UN information centers.

The price of the Directory is US$25. No free copies are available. Request from: *Development Forum* DESI/DPI, United Nations, Room DC1-559, New York, NY 10017, U.S.A.

(**Garforth** *continued from page 16*)

Access to the Means of Communication

Research and experience have highlighted the uneven distribution of literacy skills, of radios and televisions, of newspapers and magazines, within and between rural areas. Similar disparities are inevitably emerging with the new developments in telecommunications and computer-based information systems, such as on-farming computing and Viewdata in England and telephones in rural areas of developing countries.

Conscious efforts are needed both to use those technologies that are more widely accessible and to increase people's access to those technologies that extension agencies select. Literacy programs, mobile video units, audiocassette recorders, radio forums, community television sets – these can all increase the access of potential users to media communication. They can also reduce considerably the unit cost, per recipient, of providing information.

Hardware Primacy

There is a tendency for new developments in information and communications technology to become seen as beneficial, even necessary, components of an efficient extension service. As with radio broadcasting and cinema vans in the 1960s, so now with video technology and microcomputers: they are regarded intrinsically as a "good thing," even before any serious thought has been given to how they are to be used or what the implications might be for staffing, training, and organizational structures.

The acquisition of equipment often tends to outstrip the agency's capacity to use it effectively. Capital funds can buy the hardware today: it takes time, commitment, and money from over-stretched recurrent budgets to train staff in the use and maintenance of the equipment. Mobile video units without gasoline, videotapes or trained production staff, printing presses without graphic artists or adequate supplies of paper, and microcomputers with no suitable software, contribute little to rural extension.

Before investing in new communications technology, it is important to define clearly how it will be used to support extension, including the adjustments that will be needed in budget and staff allocations. At the same time, it is clear the *existing* communication facilities are often underused. The potential of radio is poorly exploited in many situations. Print media could be used more imaginatively. Visual aids equipment at training centers and local extension offices is often unused because replacement bulbs are not available or staff have not been trained how to use them effectively.

Pressure off Field Staff

Communications technology can undoubtedly support and enhance the work of field-level extension staff, but it can also put increased demands on them. The success of media-based campaigns in Tanzania, Botswana, and China have depended on the efforts of large numbers of extension workers in organizing, training, and supporting volunteer group leaders. More generally, mass media may raise the expectations of rural people which they will look to extension staff to fulfill, or may prompt technical questions which extension workers will be expected to answer.

The potential of local media may only be realized if extension staff develop production skills and are able to allocate time to such activities. The effective use of media in the field requires that extension staff be able to reinforce, explain, and demonstrate ideas communicated by those media.

This complementarity of media and extension workers demands that investment in communications technology is matched by in-service training, the provision of reference material for extension workers, and adjustment to preservice training curricula.

Return on Investment?

Finally, what return can we expect from investing in communications technology? Research has begun to provide guideline costs of mass media use in extension. But there are serious conceptual and methodological difficulties in trying to assess the benefits in terms of economic returns.

It is less problematic to evaluate impact in terms of changes in knowledge, attitudes, and practices, and here the research evidence is encouraging. But even so, it is difficult to separate the effects of media from other influences on rural people's behavior (such as the availability of resources and the activities of field-level extension staff); and in any case, as we have seen, the effectiveness of media and telecommunications is heavily dependent on the quality of the content which they carry and on the structures and processes within which they are used.

It is more meaningful to ask how communications technology can be used to increase the cost-effectiveness of rural extension. What functions of extension can it help us to carry out more efficiently? How can it enhance the performance of extension workers in their contact with rural people? To what extent can it substitute for relatively scarce and expensive field staff in routine information provision to free them for the more challenging and creative task of working alongside rural people.

We cannot, then, answer questions about returns in investment, or impact on the lives and livelihoods of rural people, by looking at the technology in isolation from the context in which it is used. Whether or not communications technology, including the more familiar range of mass media and extension aids as well as recent developments, will make a significant contribution to rural extension depends ultimately on our ability to adjust our organizational structures and extension approaches to take maximum advantage of the potential it offers. ■

Publishing Opportunity for Communication Researchers

In 1981, the Graduate Program in Communications at McGill University, Quebec, Canada, launched a series of publications entitled *Working Papers in Communications*, for the purpose of giving researchers in the field an outlet for work-in-progress; for its exchange with colleagues in related disciplines; and to provide reasonably priced classroom materials for teachers in communication studies. Recently published papers address a range of issues including the effects of technology on communications, the impact of mass media upon cultural production, the growth of theoretical approaches in the field of communications, and the nature of specific communication practices such as the theater, cinema, and news media.

Submissions are welcome in any facet of the study of social communications. *Contributions are currently being solicited for a publication of four or five essays on the relationship of women to communications in developing countries.*

Please submit three copies of your manuscript (25-60 pages in length) in French or English to: *Working Papers in Communications*, Graduate Program in Communications, McGill University, 3465 Peel Street, Rm. 204, Montreal, Quebec, Canada H3A 1W7. A list of papers currently available can also be obtained from the above address.

★★★

***Working Papers in Communications* is also seeking to establish a Regional Editor program in order to encourage and facilitate the submission and adjudication of manuscripts. Candidates for these positions should be senior graduate students or junior faculty members in the area of communications. Applicants are asked to submit their *curriculum vitae*, along with samples of recent publications, to the above address.**

The complete proceedings of the AERDC's twentieth anniversary conference *Investing in Rural Extension Strategies and Goals* are available from: Elsevier Applied Science Publishers Ltd., Crown House, Linton Road, Barking, Essex IG11 8JU, England.

Dr. Garforth is with the University of Reading's Agricultural Extension and Rural Development Centre (AERDC) in Reading, England.

Mass Media and Communications Technology

by Dr. Chris Garforth

(This reprint appeared in its entirety in Media in Education and Development (MED), *December 1985. It was first presented as a discussion paper at the twentieth Agricultural Extension and Rural Development Centre conference in September 1985. We would like to thank George Grimmett,* MED *editor, for granting us permission to print an abridged version of this article.)*

If information is a key resource in rural development, and the communication of information a major function of extension, it is no surprise that extension practitioners are looking with interest at the potential contribution to their work of mass media and communications technology. The speed and efficiency with which information can be transmitted by electronic means from one place to another, and the capacity of computer-based information systems to store data for rapid retrieval, continue to develop apace at a time when extension organizations are looking for more cost-effective ways of making useful, relevant information available to rural people. At the same time, there is a growing recognition of the need to support extension workers in the field, both by contributing to the general information environment within which they work, and, more directly, by providing them with extension aids, and updating their own technical expertise and knowledge.

Three Technological Trends

Mass media and extension aids, ranging in technological complexity from film to flannelgraph, have been used in extension for many years. There are three technological trends, however, which are significantly increasing their potential role. The first is the decreasing cost, increasing reliability, and relative ease of use of much recent communication technology, all of which make the technology increasingly accessible. The development of computers (especially the increasingly powerful, compact, and relatively inexpensive microcomputers) and video are two cases in point.

Second, recent years have seen considerable technical developments in the transmission of information, both globally through a rapidly growing network of communication satellites which has the potential for linking people in virtually any two places in the world in a face-to-face dialogue, and more locally through cable networks and small-scale transmitters which open up opportunities for community-based radio and television services.

The third trend is the integration of the various components of communications technology, especially the bringing together of the data processing and storage capacity of computers with the ability of telecommunication systems to transmit electronically coded data extremely quickly.

A few examples will indicate the range of possibilities opened up by these developments.

1. Field extension workers in remote areas can be linked with expertise and sources of information in central locations. Two-way radio, via satellite, is already well tried in the health field, enabling diagnoses and advice on treatment to be given by a doctor or midwife hundreds of miles away. The expansion of telephone networks into rural areas offers similar opportunities.
2. Research workers can carry out on-line literature searches on bibliographic databases held on another continent.
3. Viewdata systems link domestic television sets, through telephone lines, to information stored on centrally located computers. In England, a public Viewdata system (Prestel) enables a user to call up the information required for display on a television screen, the information itself being regularly updated by various information providers.
4. Video is being used in a number of ways: to make field recordings for incorporation into television programs: to bring technical information to rural families via mobile units or at rural training centers; to motivate people to work in community development programs; to support campaigning or lobbying activities by community groups; and to give instant feedback to extension trainees on their performance in practical exercises.
5. Community television sets can be linked, as in India's SITE experiment and later developments, via satellites and land-based relay stations, to a central transmitter, enabling a mass audience of rural families to see and discuss centrally produced educational broadcasts.

The Institutional Context

The above examples demonstrate that communications technology offers increasing scope for localizing the production and distribution of media, for two-way interactive communication, for communication within and between rural communities, and for a more active role to be played in communication processes by people who have hitherto been regarded (in communication theory and extension practice) as passive recipients of information.

Through public telephones, rural people can initiate contact with extension workers. Low-cost, small-scale printing equipment is used by community groups to produce their own newsletters, bulletins, or campaign material to be broadcast but also give large numbers of local people the opportunity to be seen and heard "on the air," thus helping to break down traditional distinctions between communication professionals and audience. Media, and increasingly telecommunications, can serve as a bridge between groups and communities within rural areas instead of acting simply as a radial link from a central institutions to a mass rural audience, thus facilitating a shift from authoritarian to more participatory models of extension.

On the other hand, the technology also encourages the centralization of media production, data storage, and the distribution of information. This can greatly increase the speed and efficiency of information flows, but also offers greater scope for control over access to and use of the means of communication. For the ability to store and communicate information confers power: power to determine what information is to be made available to whom, power to influence the perceptions and attitudes of large numbers of people.

Current trends in communications technology thus present a wider range of options for media use within rural extension than has previously been possible. Decisions on investment in new communications facilities are often outside the control of rural extension organizations. But within the constraints and opportunities set by available facilities, choices about how communications technology is to be used in extension are seen to be predicated on more fundamental decisions about extension ideology and approach.

Whatever the nature of those decisions, a number of issues must be confronted if the potential contribution of new communications technology to rural extension is to be realized.

(Continued on page 15)

WHO AIDS Health Promotion Unit is Established

WHO's Special Programme on AIDS has recently established an AIDS Health Promotion Unit whose purpose is to disseminate information worldwide about education and communication interventions to reduce HIV transmission. A periodic newsletter, *AIDS Health Promotion Exchange* will be published and distributed free to those interested in receiving this information on a regular basis. For further information contact WHO/Special Programme on AIDS, CH-1211 Geneva 27, Switzerland.

Clearinghouse On Development Communication

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Comics – for Health

by Indi Rana

For some time, there has been controversy in development circles about the use of comic books to disseminate health information to rural populations. Many development communicators believe that comics are not a good medium for disseminating these messages, whether for adults or for children, since understanding the visual message requires a sophistication of perception developed only after a good deal of exposure to reading and pictorial materials.

In 1984, the author was asked by the World Health Organization (WHO) to develop a comic book on immunization for rural school children in India with a possible adaptation kit for use in other languages, cultures, and countries. The idea was to use child-to-child and child-to-parent communication to carry the message that all children under 12 months of age should be immunized. Children between 8-12 years were to read the publication, perhaps in class, perhaps as an extra-curricular give-away, and take the message home to their parents.

Over the past 15 years, a strong comic book culture featuring myths, legends, and adventure stories has developed in urban areas of India. Comics are the only truly successful children's trade books in the country – the "better" books are perceived as being too time-consuming and expensive. It was thought that after this steady outpouring of comic books to urban areas, they must have filtered through to rural school children. Perhaps a comic book, similar to those available in the market but carrying health messages could be prepared.

A Preliminary Survey

To test this hypothesis, a limited field survey was conducted in Madhya Pradesh, one of India's four lesser developed states, to uncover the target audience's: 1) pre-knowledge of immunization to determine how much information should be included; 2) visual literacy to determine the level of sophistication of the visuals; 3) interest in story types to select the most acceptable vehicle for the health messages.

The survey was conducted in eight schools with a total of 329 eight-to-fifteen year old boys and girls in and around the towns of Satna and Nagod. Both towns have outlying villages and farms, and well-stocked market places with bookshops that carry local Indian comics. The institutions ranged from private urban schools to semi-urban government schools to rural government schools.

Results showed:

- the children's pre-knowledge of immunization was higher than expected;
- exposure to comic books in rural and semi-urban schools was nil, while children in private urban schools were reading them voraciously;
- visual literacy among rural and semi-urban school children was poor. When shown standard comic fare, they confused characters from frame to frame, and bubbles (enclosed text that is placed beside the person speaking) and insets often were misunderstood;
- when shown comic pages and straight text side-by-side and asked which they would rather read, rural and semi-urban school children preferred the straight text. They did, however, show interest in the pictures, commenting on details;
- the story types most preferred were myths and legends, cops and robbers, stories about kings and queens, and folk tales.

While the results of the survey meant there was a tremendous challenge ahead, the consensus at WHO/New Delhi was, given the right kind of comic book, rural children –

(*Continued on page 3*)

Avoiding Social Marketing Pitfalls

by Terry Peigh

Perhaps it was to be expected. In a way, it is a good sign of learning and growth. As social marketing becomes more widely used by development practioners throughout the world, their social messages are falling victim to many of the same problems experienced by commercial marketers.

Anxious to apply the valuable lessons gleaned from commercial applications, social marketers are mimicking the harmful practices as well. While there is an adage that says imitation is the most sincere form of flattery, the continued evolution and growth of social marketing and communication will be slowed unless social marketers resist the temptation to indiscriminantly apply some recently adopted commercial marketing techniques.

First Pitfall: Audience Identification

Social marketers should be aware of three common pitfalls when applying commercial communication techniques in developing social messages. The first concerns the target audience. With many consumer goods, be it butter, shoes, or soap, the target audience usually is very large so the product potentially appeals to a majority of households in that population. Not only is the target broad, the story line is probably appropriate to most of the audience. This is not likely to be the case when marketing social ideas and products.

A marketer of family planning products, for example, must define a very special target to maximize the impact of the message. Marketers must decide if the priority target will be young teenage girls who are becoming sexually active. Or perhaps it

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Development Communication Report

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**Clearinghouse on
Development Communication
1255 23rd Street, N.W.
Washington, D.C. 20037 USA
Tel. (202) 862-1900
Cable: ACADED
Telex: 197601 ACADED WASH**

**Judy Brace, Director
Kathleen Moran, Editor
Patricia Simons, Information Specialist
Janice Stallard, Program Assistant
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(**Peigh** *continued from page 1*)

should be uninformed newlyweds. Or maybe people who know about family planning practices but have decided against them for personal reasons.

Each of these alternative targets is unique, differing considerably in its needs, problems, information levels, lifestyles, and motivations. Addressing them with anything less than a specially focused message will only diffuse the potential impact of the message.

Second Pitfall: Audience Interest

The second pitfall in social communications is assuming that the target audience WANTS to hear a particular message. Because they devote so much of their lives to studying a particular product or service, marketers – be they commercial or social – incorrectly assume their target audience is as interested in their product as they are. This assumption often leads to messages that may not be particularly interesting or compelling. As a result, all marketers must work hard to capture the attention of their audience. While this is important for commercial marketers to keep in mind, social marketers must work even harder to perfect their messages to overcome the public's initial resistance to social messages.

When producing a social message, it is particulary important to introduce such elements as words, music, drama, action, sound effects, color – anything that invites the viewer or reader and holds his or her attention throughout the message. *Continually ask: Is this message at least as interesting and as inviting as other messages using the same medium?*

Third Pitfall: Identifying Rewards

Social marketers often fall victim to designing messages that lack a "reward" – a compelling personal benefit. Too often social messages merely inform people what a product or service does or how it works and do not take the critically important next step – telling the target audience what personal benefit they will derive from adopting the recommended social practice.

For example, it is not enough to tell people that by using family planning methods they can control family size – the message must tell people how their personal lives will be improved if they control the size of their family. If market research shows that the benefit most meaningful and important to the target audience is a better husband-and-wife relationship or better health for the wife or better living conditions for the children, the social marketer must directly connect the recommended practice or product to one of these identified and desired benefits.

Social development organizations should be commended for their rapid adoption of commercial marketing techniques; major social programs throughout the world receive greater exposure and use today because of their willingness to try these approaches. By avoiding some of the common marketing pitfalls noted above, social marketers will make even greater strides. ■

Terry Peigh is a vice president at Foote, Cone and Belding Communications, a worldwide commercial advertising firm. He has coauthored two books on mass media for social development.

Distance Teaching Course Offered

The International Extension College and the Department of International and Comparative Education, University of London Institute of Education are holding a four-month course, from April 22 to July 29, 1988, on distance teaching and its relevance for Third World countries.

By the end of the course each participant should be able to: analyze an educational problem in his or her own country and determine whether distance-teaching methods are appropriate to it; make appropriate choices between different methods of distance teaching; assemble an administrative plan for a distance-teaching system; and prepare production materials for a specified audience.

The application deadline is February 12, 1988. For application forms or further information write to: Departmental Secretary, Department of International and Comparative Education, University of London Institute of Education, 20 Bedford Way, London WC1H 0AL, U.K. Telephone 01-636-1500.

Training Modules for Diarrheal Disease Control

The Sahel Regional Field Office of the Technologies for Primary Health Care (PRITECH) Project, in collaboration with the World Health Organization, has recently published a series of French-language training modules on diarrheal disease control. An epidemiological overview of diarrhea is outlined in Module 1; Module 2 describes the treatment of diarrhea; Module 3 discusses how health education techniques can be applied to diarrheal disease control programs at all levels of interaction; and Module 4 provides information on various elements of a diarrheal disease control program. A teacher's guide and workbook are also included.

English translations of these modules are being prepared. The French version is available free-of-charge from: Suzanne Prysor-Jones, PRITECH, B.P. 3746, Dakar, Senegal.

(**Rana** *continued from page 1*)

being children, eager and curious – would quickly adapt to this new and interesting form of reading after a few attempts.

Preparatory Steps

The problem then was to select an appropriate format. Comic books available to children in urban centers usually are large, colorful, and contain long, fairly complex stories. Knowing how cautious rural people are about accepting new things, a small, less glossy format was chosen and the stories were printed on newsprint. In this way, they did not appear to be so valuable or special that parents would lock them away.

There are four separate short stories, each of which is bound with a similarly designed cover, or they can be bound together, and be made into a 32-page publication. The smaller, single-story comics are intended as trade items between children during their play activities, encouraging wider dissemination of the health messages. The larger volume has been prepared for teachers to use in the classroom.

To make the pictures visually comprehensible, the stories appear in two formats:

a) A bubble story with a maximum of two very clearly delineated bubbles, with parallel explanatory text running above it.

b) A picture story without bubbles, with parallel explanatory text running below the picture.

The pictures, very simple and clear, are not expected in and of themselves to carry the story as they do in more sophisticated comic books, where a minimum of text acts as a stimulus for the next picture. All pictures appear in standard-sized frames, each carrying only a few people and objects. The characters remain in the same position from frame to frame unless there is a need to change their position as dictated by the story.

Building in the Message

To make the health messages interesting, stories are built around myths, kings and queens, cops and robbers – the preferred story types. One story is built around a natural disaster, a well-known phenomenon in rural India.

Despite one of the survey findings that rural children are not accustomed to being heroes or to taking their own personal initiative, the storylines in the comic books depict young people who make decisions for themselves and who teach their elders new things. This was done to encourage children to become agents of change and to think for themselves more often.

Creating interesting titles was particularly important; children had to be attracted to these comic books. "Stories of Adventure," for instance, would be much more likely to attract a child than the titles "Stories of Immunization," or "Vaccinations are Good for You."

An extensive field survey was conducted by the Voluntary Health Association of India (VHAI) before final publication. Results would be used to show: a) the target audience's comprehension of the storylines; b) their retention of the data and concepts; and c) their comprehension of the illustrations and text. Children in 30 schools around Delhi and Madhya Pradesh were shown black and white illustrations without the text and asked to repeat the story as they saw it. This helped identify problems related to visual comprehension (see illustrations). The children were then asked to read the entire comic – the text and the illustrations – and to answer questions on a mini-exam sheet. They were visited a week later and interviewed again to test their retention.

The results showed that the comic were comprehensible as far as visuals and text, storylines, and vocabulary were concerned. The major problem was in the children's understanding of complex time frames and flashbacks; both were eliminated as a result.

Adapting for Dissemination

The English version of the comic book is essentially a module from which translations and adaptations can be made by those interested in disseminating the information. The copyright is, therefore, non-restrictive for educational purposes.

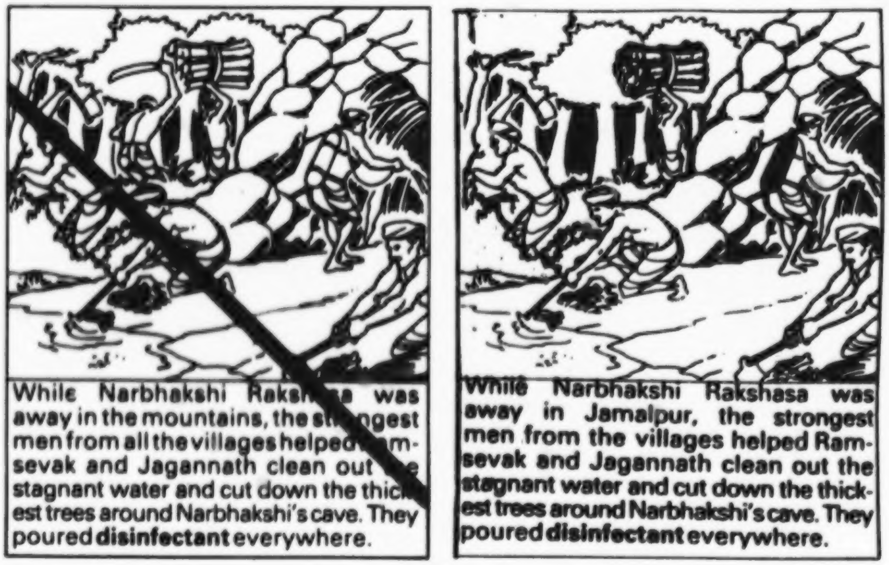
The stories are generally Indian in context but all of them can, with careful attention to detail, be adopted to suit a particular region in India, or be used in other countries with similar rural characteristics.

UNICEF/New Delhi is distributing 85,000 copies in Hindi free-of-charge to the Board of Education in New Delhi and agencies associated with UNICEF. The comic book will eventually be translated into all of the Indian languages. WHO offices worldwide have received copies and have shown interest in adapting the book for their regions. Other health agencies in Sri Lanka, Nepal, the Maldives, Bhutan, Burma, and Indonesia are looking into adapting the publication.

With careful research and thoughtful presentation, comic books with health information built into their storylines could become a common sight in rural communities, helping to dispel the belief that this popular format is not suitable for social messages. ■

For more information contact: WHO, SEARO, World Health House, Ring Road, New Delhi-110002, India.

Indi Rana has worked as a private consultant with numerous international organizations to develop cultural, educational, and communication materials, and has trained others in the use of these materials. She also is an author of children's books.


While Narbhakshi Raksh a was away in the mountains, the st ngest men from all the villages helped m-sevak and Jagannath clean out e stagnant water and cut down the thic est trees around Narbhakshi's cave. They poured **disinfectant** everywhere.
While Narbhakshi Rakshasa was away in Jamalpur, the strongest men from the villages helped Ramsevak and Jagannath clean out the stagnant water and cut down the thickest trees around Narbhakshi's cave. They poured **disinfectant** everywhere.

In a pre-test, children thought the man with the knife in the frame on the left was going to kill the man carrying wood. The frame on the right shows how this was corrected in the final copy.

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On File at ERIC

by Barbara Minor

Documents recently entered in the ERIC (Educational Resources Information Center) files include a description of the use of teleconferencing to link Canadian physicians with Kenyan and Ugandan physicians; an overview of issues involved in planning for microcomputer use in schools in Asia and the Pacific region; proceedings of an international conference on open higher education; and a paper on how to tailor information strategies for public and educational institutions in Latin American countries. All of these documents are available in microfiche and in paper copy as well from the ERIC Document Reproduction Service (EDRS), 3900 Wheeler Ave., Alexandria, Virginia, U.S.A. Be sure to include the ED number and payment in U.S. funds for the price listed plus shipping. (VISA and MASTERCARD charges are accepted by EDRS.) Shipping costs can be calculated on the basis of three microfiche per ounce and 75 microfiche or pages of paper copy per pound. **The ERIC Clearinghouse on Information Resources located in Syracuse, New York, cannot supply copies of these documents.**

- House, M. and MacLeod, S. *Into Africa: Telemedicine Links Canada with Nairobi and Kampala*. September 1986, 9pp. (ED 281 518)

During the past decade, teleconferencing systems have gained a substantial role in continuing medical education in Canada through maintenance of contact between physicians in remote and urban areas, medical education, group consultation, and administration. A group of Canadian physicians at Memorial University of Newfoundland and their Kenyan and Ugandan counterparts have undertaken the development of a similar satellite link between Canada and East Africa with ground transmission between Nairobi and Kampala. This program has been accepted for participation in SHARE, a project which makes satellite circuits available to agencies to organize health education programs between developed and developing countries. Since the inauguration of the system in January 1986, there have been formal weekly conferences and informal teaching sessions covering such topics as nutritional status and immune response, hepatitis in pregnancy and the newborn, emergency pediatric medicine, and rickets. The system is also a cost effective means of maintaining communication between North American researchers based in East Africa and their home laboratories. It is hoped that the teleconference system will enable the libraries at the University of Nairobi and Makerere University to make online literature searching available to the medical community. Satellite links such as the one described here are currently the most realistic means of providing contact between the medical faculties in Nairobi and Kampala and a broad spectrum of academic physicians in Canada. Available from EDRS in microfiche for 78¢ or in paper copy for $1.85.

- Lancaster, David. *Management and Planning Issues in the Use of Microcomputers in Schools. Occasional Paper in Educational Planning, Management and Statistics No. 11.* 1985, 61pp. (ED 281 521)

Reasons underlying the growth of interest in Asia and the Pacific region in educational computing and issues raised by such developments are examined in this Unesco paper, which begins by describing three main areas of use of microcomputers in school – for teaching computer studies, for computer assisted learning, and for school administration. Reasons for microcomputer use are considered as well as internal and external influences that affect the decision to incorporate computers in school activities: 1) the need to relate education to the needs of the economy; 2) parental pressures; 3) pupils' expectations; 4) the need to facilitate data processing for reporting to external groups; 5) the need for better information for decision making; 6) demands for increased efficiency; 7) assumptions of increased learning effectiveness; 8) push from technical experts; and 9) marketing policies of manufacturers and suppliers. Also considered is the impact of the introduction of computers in schools on teaching methods, curriculum content, and the organizational structure of schools. Issues that are likely to arise with the use of microcomputers in schools are then discussed, including funding, suitable computer programs, teacher training, equipment requirements, cost effectiveness, responsibility for computer use and management, and contingency plans for equipment breakdowns. The importance of feasibility and cost benefit studies and consideration of the organizational, behavioral, and managerial issues involved in planning for computer based programs in schools is emphasized. Twenty references are provided. Available from EDRS in microfiche only for 78¢.

- *Open Higher Education. Proceedings of an International Conference* (Bangkok, Thailand, August 13-17, 1984). 1984, 391pp. (ED 275 280)

The proceedings of this international conference on open education cover five themes: philosophy and concept, development trends from an international perspective, the dichotomy of equity and quality, graduates' employment, and the management challenge. Four of the 41 papers included in this collection are directly concerned with the use of communications technology in open education: 1) "Impact of Media and Technology on Open Higher Education in India," by Y. B. Mathur; 2) "Radio and Television Universities in China," by the staff of Central Radio and Television University, China; 3) "The Adaptability of the Radio and TV Universities to Society," by Tang Yi; and 4) "Computing in Open Higher Education: Some Lessons," by Christ Sauer. Papers on development trends include: 1) "Open Higher Education Development Trends: An International Perspective," by Robert McCaig; 2) "Strategies for Development of Curriculum, Personnel, and Instructional Materials," by Ali Bin Ahmad; 3) "India's Experiment in Open Higher Education: A Study of Andhra Pradesh Open University," by R. S. Ramachandran and V. S. Prasad; 4) "The Development of Experiential Learning Programs for the Open University," by Frederick Baker; and 5) "Distance Education in Canada: Toward a Typology of Learning Activities for Adults," by John P. Minnis. A conference program and names and addresses of participants are provided. Available from EDRS in microfiche for 78¢ or in paper copy for US$29.60.

- Crowther, Warren. *Tailoring Information Strategies for Developing Countries: Some Latin American Experiences.* 1984, 12pp. (ED 274 375)

This paper addresses the conditions of developing countries that must be taken into account in developing information strategies for their public and educational institutions or projects. Its central argument is that newer information science concepts, although demanding technological and conceptual sophistication, can be useful in the transition from an information-poor society toward information richness; however, these concepts have to compete in practice with a continuing flood of modern and less demanding concepts that lead to a society that has adequate information but not the accompanying power or decision-making effectiveness. As a demonstration, 24 design principles for information strategies resulting from recent experience in the public sector and universities of 20 Latin American countries are enumerated. These principles are proposed as specifications for technical cooperation with Third World countries in general. Available from EDRS in microfiche for 78¢ or in paper copy for US$1.85. ■

Barbara B. Minor, Publications Coordinator, ERIC Clearinghouse on Information Resources, Syracuse University, Syracuse, New York U.S.A. For information on how to order these documents, please see the first paragraph of this column.

Bridging Space for Peace

by Paul Verhagen

In 1984, *Beyond War*, a California-based, non-profit educational foundation, presented its second annual award to the International Physicians for the Prevention of Nuclear War. The award presentation occurred via one of the first two-way videoconferences to interconnect the United States and the Soviet Union. In the autumn of 1985, recipients of the third annual award were the signatories of the Five Continent Peace Initiative: President Raul Alfonsin of Argentina, Prime Minister Rajiv Gandhi of India, President Miguel de la Madrid of Mexico, former President Julius Nyerere of Tanzania, the late Prime Minister Olof Palme of Sweden, and Prime Minister Andreas Papandreou of Greece. This time, however, the capitals of the countries involved were to be interconnected with the San Francisco headquarters of *Beyond War* for the award presentation in the first-ever, five-continent, two-way videoconference.

Broadcasting authorities from the involved countries were contacted to coordinate videoconference activities, with the exception of Tanzania which did not have an operating television system. To fill this vacuum, representatives from *Beyond War* went to Nairobi, Kenya in mid-November 1985 in search of a production company to go to Dar-es-Salaam, Tanzania and direct the videoconference from that site. They approached Media Productions, Ltd., with which I was associated at the time. The management thought the production feasible and committed the resources of the company to the project.

Overcoming Early Obstacles.

In our early meetings, we quickly discovered we had some formidable obstacles to overcome. For one, while there is a two-way microwave link between Dar-es-Salaam and Nairobi, site of the Intelsat uplink we would be using, the Tanzanian portion of that system had never transmitted audio or video signals. Furthermore, no portable microwave equipment was available in Tanzania that would allow us to transmit signals to and from State House, the office of the President of Tanzania and site of the presentation ceremony from that country. The existing microwave equipment used a special video connector of which there were no spares in Tanzania, a must if we were to receive and transmit our signals. The final obstacle was that the only available trans-Atlantic satellite transponder had already been booked for an unspecified period at the precise time we would need it.

To verify that the Tanzanian system had both audio and video capability, technicians at Tanzania Posts and Telecommunications Corporation in Dar-es-Salaam were asked to conduct transmission and reception tests with Mombasa, the linking site in eastern Kenya. This was done successfully, reassuring us that the Tanzanian connection functioned properly.

To solve our lack of portable microwave equipment, we turned to our associates at Uganda Television, which had televised programs produced by Media Productions in the past. Uganda Television agreed to loan us two microwave systems and a technician in exchange for Ugandan broadcast rights to the ceremony. Meanwhile, the Ugandan Post Office and the training center of Kenya Posts and Telecommunications Corporation both loaned us the necessary connectors. With Uganda in the midst of a civil war at that time, this otherwise simple task – requiring a round trip from Nairobi to Kampala – produced some of the most anxious moments of the entire project.

As to our third dilemma of uncertain satellite transponder time, all we could do was wait and see what would be available at the time of transmission.

Early in December 1985, after many telephone conversations and telex messages between the various organizations and ministries, we dismantled the studio at Media Productions and carefully packed three cameras, a video switcher, ten video monitors, two high-band 3/4 inch videotape recorders, an editor, two audio boards, one public address system, and four portable lighting packages. The equipment was put onto two vehicles, one of which would serve as our on-site control room, and a week before the ceremony three crew members set off on the long road trip from Nairobi to Dar-es-Salaam.

To supplement Media Production's equipment and the microwave hardware from Uganda Television, we ordered two microwave systems from the United States and a large quantity of audio and video cable with plenty of spare connectors and adaptors. Everything was flown into Dar-es-Salaam along with a video projection system so the audience at State House could view the proceedings coming from other award sites. We knew that we were going into a country with little or no video equipment; so we planned carefully for every conceivable contingency and brought along a good supply of spare equipment.

Setting the Stage

After we arrived in Dar-es-Salaam, it was decided the event would be held outside, in front of State House. Our schedule was pushed back a day when one of the vehicles broke down enroute and had to be towed into Dar-es-Salaam.

Setup time was further slowed by the extremely hot, humid weather and by the difficulty of producing a television program in Dar-es-Salaam where television production was still a novelty. For example, our portable microwave link from State House to Tanzania's newly tested fixed microwave system (a two-hop configuration) took two days to construct. The return path from the Intelsat downlink (a simpler one-hop configuration) to be used to receive the awards ceremony from San Francisco and the other cities, took another two days to construct because of minor damage to the microwave transmitter.

Making Progress

One of the most exciting aspects of the project was working with our Tanzanian colleagues. Even though they had little or no experience with television, their enthusiasm and eagerness to make the project a success was contagious. With their help, we passed two major milestones several days before the actual transmission. Two days before the ceremony we successfully transmitted audio and video test signals from State House to Nairobi. The previous night, however, it had rained heavily and caused the ceremony tents to collapse. Fearing the same thing might happen again, a decision was made to move the ceremony indoors.

One day before the ceremony, we successfully received audio and video transmissions from an Intelsat satellite over the Indian Ocean, and the video image was projected onto a large-screen television. It seemed that the show would go on after all!

The day of the ceremony was hectic. We had to dismantle all the equipment the night before because another ceremony preceded ours in the same room. Once the ceremony was over, we quickly reset the cameras, lights, audio, and television projector and tested everything as far as Nairobi. They were receiving audio and video from us and we were receiving audio and video from the Indian Ocean satellite. There was still no word on whether we would get our satellite transponder when we needed it.

Just before the start of events, we received the test signal from San Francisco; we had video but no audio. As the ceremony began in San Francisco, we still were not receiving audio from them and San Francisco was not receiving us at all. About five minutes into the program, we finally started receiving the audio portion. Everything went smoothly as the other sites around the world were introduced: we could see and hear them all. San Francisco, on the other hand, still was not

(*Continued on page 11*)

TUNING IN

Update on Interactive Radio Instruction Activities

Introduction

by Thomas Tilson

It is timely that this issue of the *DCR* provides an update on interactive radio instruction (IRI) programs, for there have been many important developments during the past year. Increasingly, IRI is recognized as an important alternative for meeting the crisis of declining quality of primary school instruction in developing countries. While most nations have greatly expanded their enrollments during the past decade, they are finding it increasingly difficult to meet the rising costs of primary education and to maintain, no less improve the quality of instruction.

IRI is helping to meet this challenge by providing high quality education at a low cost and the United States Agency for International Development (AID) is continuing its support for this proven innovation. Included in this update are reports from Honduras, Bolivia, the Dominican Republic, Papua New Guinea, and Lesotho, where IRI programming is either being adapted or introduced into countries' educational curricula, or where IRI activities are becoming institutionalized into the educational system. IRI activities are also underway in Nepal. A report on these activities appeared in *DCR* No. 57.

Thomas Tilson is Project Director of the Radio Learning Project that is charged with diffusing the IRI model.

Honduras

by David Edgerton

The Honduras Radio Learning Project (HRLP) marks interactive radio instruction's transition from research and development to full-scale implementation.

With technical assistance from HRLP, a Honduran staff is at work on an IRI mathematics course for Grades One through Three, scheduled for test broadcasting in February 1988. National dissemination is scheduled for 1989. An IRI Spanish-language reading course for Grades One through Three is in the early design stages and is scheduled for broadcast in 1989.

Interactive radio is being developed in Honduras under the auspices of *AVANCE, La Asociación de Promoción y Desarrollo Socioeconómico* (the Association for Socioeconomic Growth and Development), which is unequivocal in its commitment to IRI. The name of its recently established radio production unit reflects this support – the *División de Radio Interactiva* (the Interactive Radio Division) – although *AVANCE* intends to generate a variety of educational and informational radio material in addition to IRI.

AVANCE is taking IRI program development in several interesting new directions. First, the math series is an intensive course in mental arithmetic. Mathematics educators agree that mastery of elementary mathematics is not primarily a matter of learning to solve problems on paper, but of cultivating certain mental processes. The aim of *AVANCE's* IRI math series is to bring the strengths of the IRI methodology to bear in teaching children these mental processes. The series will complement conventional pencil-and-paper textbook study by presenting lively interactive drill and practice in an engaging dramatic context designed to help learners discover how mathematical problem-solving applies in their own daily lives.

Secondly, HRLP recently prepared an integrated computer design to give *AVANCE* desk-top publishing capability, strong evaluation and research capability, and an integrated computer network designed specifically for generating IRI scripts on word processors. Script development is the heart of IRI program development, with countless working hours devoted to designing, writing, and revising each script. The use of computers to generate IRI scripts will itself be a technological leap forward.

Finally, *AVANCE* is setting out to generate a wide out-of-school listenership. For the first time, IRI programming will contain commercial listener appeal. *AVANCE's* goal, as specified in its Cooperative Agreement with AID, is to become financially independent within four years. This means that all *AVANCE's* undertakings, IRI included, must generate income. To accomplish this, its Interactive Radio Division must produce sufficiently engaging IRI programming to win a large public listenership and the support of advertisers.

If other IRI projects are any measure of the interest generated by this type of programming, attracting public listeners should not be a difficult task. Thanks to the proven success of pilot projects in other Latin American countries and to modern technology, Hondurans nationwide soon will have easier access to mathematics and language lessons that have been designed for their special needs. ■

Dominican Republic

The goal of building a full-service instructional radio unit based on the IRI model was achieved by IRI's on-going, fully institutionalized project: *RADECO, Radio Educativo Comunitario,* (the Radio Assisted Community Basic Education Project) in the Dominican Republic.

RADECO was the only original IRI project placed in a non-formal context. Programming was developed that presented the entire elementary curriculum condensed into three grade levels (for ages 7-14) in one-hour daily broadcasts, to communities in southwestern Dominican Republic where there are no formal schools.

In late 1986, the RADECO project was incorporated as a permanent unit within the Dominican Republic's Secretariat of Education, after the five pilot-project years showed conclusively that radio students learned at least as much as students who attended rural schools despite the lack of trained teachers and of standard instructional materials. Barahona Province, the original pilot region, still maintains its RADECO communities, receiving broadcasts on a regional station.

Plans are underway for full-scale national use of the *RADECO* broadcasts, expansion of lessons through the first six grades, and adaptation of programming for use in the formal school system. Meanwhile, the unit provides public-interest broadcasting from its studios in an annex of the Secretariat of Education, producing service spots and general education programming for transmission both on the Dominican Republic's national radio network and on commercial stations.

One lesson to be learned from the directions *AVANCE* and *RADECO* are taking is that the adoption of IRI methodology appears likely to lead to revitalized interest in instructional and public-service broadcasting in general, and to the placement of systems and agencies to serve this interest. For people who use the media to promote development, these are particularly gratifying secondary benefits of IRI program development. ■

David Edgerton is the Project Director and IRI specialist for the Honduras Radio Language Arts Project, and was formerly IRI specialist for the Kenya Radio Language Radio Arts Project and for RADECO.

Bolivia

by Michelle Fryer

In 1988, Bolivia will become the ninth country to use interactive radio instruction (IRI) to deliver in-class instruction. This new project will be promoted through community information networks, as is the Honduras Radio Learning Project. It will be managed by *Fe y Alegría* (Faith and Happiness) a Bolivian private-sector organization which administers 195 public schools under contract with the Ministry of Education and Culture. In support of Bolivia's effort to decentralize educational administration, the lessons will be broadcast over local radio stations rather than from a central location.

Earlier this year, *Fe y Alegría* conducted a pilot study to assess the feasibility of using interactive radio to improve the quality of mathematics instruction. The AID-supported Radio Learning Project (RLP) provided technical support throughout the study. The study showed that: 1) Bolivian school children can learn mathematics by interactive radio; 2) the Radio Mathematics curriculum, developed in an earlier program and used for the pilot study, not only meets but expands upon the official Bolivian curriculum; and 3) Bolivian teachers can effectively use the interactive radio lessons in their classrooms with a minimum of training.

Encouraged by these positive findings, The Radio Learning Project and *Fe y Alegría* began working together to adapt the entire interactive radio curricula for mathematics (Grades One through Three) and language (Grade One) – which may be adapted from other successful Latin American Radio Learning projects – for eventual dissemination throughout Bolivia. By the end of the four-year project, it is anticipated there will be: increased access to high-quality instruction at the primary school level; significantly improved teacher ability to instruct in these critical subjects; and more learning opportunities for out-of-school youth and adults.

These expectations stem from one of the critical objectives of the project – to widely disseminate the instructional radio programs. *Fe y Alegría* has had a long tradition of community service and has been particularly successful at organizing grass-roots support for educational innovations. This new project will enhance its institutional capability to mobilize national support for interactive radio programs. ■

Michelle Fryer is an educational specialist with the Education Development Center in Newton, Massachusetts.

Lesotho

by Philip Christensen

Interactive radio instruction (IRI) was introduced in Lesotho to help improve English-language teaching at the primary education level. English-language ability is a critical determinant of future success in school. In a country with one of the highest repeater rates in the world, where fewer than one child in ten finishes primary school successfully and on time, improving the standard of English almost certainly will improve educational effectiveness.

The AID-supported Basic and Non-formal Education Project (BANFES) has been operating in Lesotho since 1985 to improve the efficiency and effectiveness of its primary education system. BANFES first worked with the Curriculum Development Centre to do a small-scale pilot test to ensure that the Radio Language Arts method would work as well in Lesotho as it had in Kenya where it was first tested. Assistance also is being given in implementing the method nationally to support English instruction in Standards (Grades) One to Three following the approved syllabus. The Ministry of Education provides the necessary support staff, while Radio Lesotho guarantees the necessary air time. Scripts are now in the process of being revised and staff are being trained in IRI production techniques at the Instructional Materials Resource Centre. Workshops are being held to instruct teachers how to use the radio lessons.

Meanwhile, actors have been hired and 11 lessons have been recorded in preparation for the start of broadcasts of Standard One classes in January 1988.

The Project has purchased a supply of radios which are sold to schools at a subsidized rate rather than donated outright. Although this innovative program has not yet been officially announced, some schools have collected money from parents to buy the radios, demonstrating that interactive radio instruction will have support both from communities and from teachers. ■

Philip Christensen is the BANFES Technical Adviser for the Lesotho Radio Language Arts Project. He formerly was the Field Coordinator of the Radio Language Arts Project in Kenya.

Radio Learning Project

Papua New Guinea

by Frank Watson and Thomas Tilson

The Radio Science Project is well underway in Papua New Guinea. This first attempt at teaching science by radio requires new techniques for interactive radio, and the project team is now testing ways of expanding IRI to meet these new instructional demands. The following dialogue illustrates some of the exercises students are responding to:

Teacher	Everyone, look at Box Six...You will see a word. The word is written backwards...Partner A, place your mirror on the right side of the word so you can read it in the mirror.
Pause (:04)	Students respond.
Teacher	The word is light. Everyone say: light.
Pause (:02)	Students respond
Teacher	Children, raise your hand if you can answer this next question.
Pause (:02)	Students respond
Teacher	Why aren't there any shadows at night when it's dark?

These brief excerpts from the fourth-grade script on light illustrates some of the new ground being broken by the Radio Science Project. First, the lessons incorporate hands-on materials to a greater extent than previous IRI projects. Usually these are locally available materials such as leaves or stones, but sometimes they include simple equipment such as mirrors. Second, the lessons incorporate some thought-provoking, open-ended questions. While IRI has been extremely successful in getting children to actively participate during the radio lessons, this is the first project to engage them with the use of material objects and to use open-ended questions on a regular basis.

The initial response from children and teachers has been extremely encouraging. During 1988, the Radio Science Project will field test lessons for all of Grade Four. There will be two half-hour lessons each week; twenty minutes for the broadcast and ten minutes for the teacher-led activities. Lessons for Grades Five and Six will be developed during the next two years. ■

Frank Watson is Project Director of Radio Science in Papua New Guinea, and Thomas Tilson is Project Technical Monitor at the Education Development Center in Newton, Massachusetts, which manages this project.

A Communicator's Checklist

1 **Distance Higher Education and the Adult Learner**, edited by Ger Van Enckerwort, Keith Harry, Pierre Morin, and Hans G. Schutze, (Heerlen, the Netherlands, Dutch Open University, 1986) 228 pp.

This book contains papers presented at a conference held in the Netherlands in 1984 with education experts from industrialized countries where they shared models of distance higher education from their respective countries. Discussions centered on ways distance education could be improved to facilitate the participation of adults in higher education.

Like other compiled publications, this is not an easy book to read. Although the editors have done a commendable job in organizing the papers into a reasonable outline, they are uneven in focus and style. Despite their stylistic inconsistencies, these papers reflect a rich diversity of purpose, organization, and practice of distance higher education, as well as some significant similarities.

This collection is worth reading because it shows the distance learning enterprise in certain key industrialized countries is at a critical juncture in its relatively early history. The composite picture of the distance higher education efforts described in this volume shows that while each has tried through various innovations to overcome barriers surrounding the conventional institutions of higher education in their respective countries, all have fallen short of doing so. The reviewer believes the reason for this shortcoming is that they are still too bound by restrictive models of the educational process perpetuated by conventional universities.

Because much of the world looks to these countries for models of education, their common experience in pioneering experiments of this sort – and especially their common failings – will, in the future, have a profound influence on the attitudes toward and practice of distance higher education throughout the world. Hence, whether the common trends revealed here will continue may well decide whether distance higher education is destined to be more than just a very expensive direction in the history of higher education worldwide, even as new technologies emerge that would radically expand the potential for learning outside the walls of conventional institutions.

Barriers Remain

While the distance education efforts that are described owe their existence to many different intents and purposes, all share the stated goal of providing a "second chance" to adults not previously able to take part in higher education. *On the whole, however, in none of these cases does distance education seem to be extending educational opportunity across barriers that have kept adults from pursuing higher learning in the past.*

The best predictors of the success of a student in distance higher education are the same as those in conventional higher education – former educational attainment and family income. Most students opting for a distance approach to higher education come from well-educated and middle-class backgrounds.

Various reasons are advanced to account for this phenomenon, but one mentioned most often is that to succeed, the student pursuing higher education at a distance has to be even more motivated than the student on the university campus because guided independent study is an isolating experience. This is so even though most of the approaches to distance education represented in these papers provide for study centers where students can go for tutoring, studying in groups, and socializing with other students.

As as result, distance education programs described in this volume (England, the Netherlands, Germany, Portugal, Spain, Yugoslavia, Japan, Canada, and the U.S.) have been plagued by a high drop-out rate. While accurate figures are not available, those who are most likely to drop out – or not make the attempt at all – are probably those who found it difficult to participate in higher education in the first place.

"Second-Chance" Students

Some educators who originally looked to distance learning as a way to provide a "second chance" to needy adults have begun to doubt its capacity to do so. This skepticism underlies the following passage from this volume, which reflects a common sentiment. "The second-chance students often prefer more social contacts with fellow students and with tutors. They are newcomers to the academic game, they have not learned to be successful with new media and to be successful receivers of messages. They associate TV and video with leisure and passive reviewing rather than active learning." This commentator implies here that adults in need of a second chance may be better served in the learning environment afforded by the conventional classroom than by distance methods. In so doing, he casts doubt on the potential of distance learning in general, rather than questioning the efficacy of the particular approach to distance learning on which he bases these observations.

Many distance educators have failed to question whether the distance education approaches to higher education represented in this volume differ from the conventional on-campus approaches in ways that would rectify the deficiencies of the conventional approach to serving the "second chance" adult. I submit that the approaches to distance education typical of those described in the book do not differ in at least one fundamental way: like most conventional institutions of higher education, they have relied on a model of the educational process whereby what is taught flows one way – from teacher to student.

One striking similarity among the approaches described in this book is the predominance of print as the primary means of delivering instruction. To make up for the lack of classroom discussion, the print materials used in these programs are carefully designed, often by an interdisciplinary team consisting of subject matter experts, educationalists, and media specialists.

Despite, or perhaps because of this rather complicated development process, the product is often so structured, so concerned with efficiency in delivering the material, that it is sterile, lacking the personality a lively rendering by a teacher and lively discussion among teachers and students would permit.

Alternative Technololgies

Audio, visual, and other types of text and graphics media delivered through various telecommunications and computer technology, if they are used at all, are used mainly to reinforce and supplement the central teaching medium, the printed correspondence text. Experiences in the use of broadcast TV and radio have convinced many providers of distance learning that these delivery systems are almost without value in teaching adults. Such critics often cite the difficulty of scheduling broadcast time, the high cost of producing and airing the materials, and the lack of opportunity for feedback with one-way TV and radio. To a certain extent, the first two concerns have been mitigated by the greater availability and affordability of technologies such as videocassettes and players and direct broadcast satellite.

Even given these and other technological advances, there is no denying that, at least for the near future, broadcast TV and radio communication are primarily one-directional. However, there are no better reasons to exclude audio and video from the educational process than to do away with print. Beyond the potential of these media for conveying rich, multi-dimensional meaning, there is the reality that more and more of the world learns about the world through TV and radio.

(Continued on page 10)

Expanding Telephone Service in Rural Brazil

by Greta S. Nettleton

Recent applications of satellite technology are helping to expand the availability of telephones in rural areas of many developing countries. Brazil's new telecommunications satellites, Brasilsat-1 and -2, exemplify how this new technology can reduce the isolation of rural populations by enabling the establishment of telephone services in selected communities throughout the country. Other "entrepreneurial" telecommunication initiatives are also proving quite popular among rural residents in providing telephone linkages where government-sponsored services have not yet been installed.

Expansion of rural telephony in Brazil has been a priority since the beginning of the decade; over 10,000 municipalities, districts, and villages now receive some type of service. In urban areas, there is a program of popularizing phone service by making it available to poor neighborhoods, that has made some progress as well. In 1985 and 1986, gains were made in the number of public street phones, semi-public phones located in shops or restaurants, and community exchanges serving up to 100 subscribers – although the porportion of users to the total population is still very small.

Economics of Telephony

Cost of service is the main factor impeding the expansion of rural telephony. While urban users enjoy lower tariffs because of high usage and favorable geographical location, poorer areas that are further from commercial centers must pay much higher fees for comparable telephone service. This is true of infrastructure costs as well; in order to have a private line, rural customers must help to pay for the capital invested in the radio links that connect them to the system as well as the basic service and tolls (the charge per telephone call). In the isolated Amazonian and west-central regions of Brazil, tolls are extremely high because they are so far from service centers. The total cost of phone service can be prohibitive even for relatively wealthy ranchers who would like to install radio links to their ranches.

This disparity between rural and urban telephone service is also evident in telephone company revenues. Lesser-used rural telephone service is seldom profitable, requiring subsidies from profitable urban areas or outside funding sources to finance the installation and operation of remote telecommunications equipment.

Another economic factor is the high cost of maintaining equipment because of the tropical climatic conditions typically found in the jungles of northern Brazil. Electronic equipment is especially vulnerable to high temperatures and humidity. Unfortunately, the equipment used in this region has not been specially climatized and has a much shorter life than if operated in a more temperate climate such as São Paulo.

Brasilsat is Established

In 1985, the government set forth as national policy the expansion of rural telecommunications to be accomplished using transmission capacity of the new Brazilian satellite. With this national policy – and the two satellites – in place, public and private telephone service is now possible thanks to Brasilsat. On October 1, 1987, Brazil's President José Sarney dialed São Gabriel, a town 2,000 miles to the north, and inaugurated the ten thousandth Brizilian town to be plugged into the country's telecommunication system.

In a typical rural public telephone installation, a town of five or six hundred people is chosen as an official development site. *Telebrás*, the state-owned telephone monopoly, installs a six-meter dish and a small-scale local telephone system. A public telephone office is usually established – rather than an automatic exchange with private lines – to make the service more accessible to the entire population. Because public telephone service requires the presence of an operator to place all calls and to collect the charges, such an installation is only practical in areas already showing signs of development and the potential for relatively high usage in order to ensure its success.

Private installation sites are also placed where development is apparent – at remote mining or agribusiness centers, for instance. A mining company in Rio do Norte in the state of Pará sponsored an internal telephone system in a mining village of 6,000 and linked it to a local exchange. The *Telebrás* subsidiary, *Telepará*, which serves the state of Pará, then installed a 24-channel UHF radio link from Rio do Norte to Santaraam, a larger town with a better-developed telephone system, where the calls are uplinked to the satellite for domestic traffic or sent via line-of-sight microwave to the satellite uplink in Rio de Janeiro for overseas calls.

An Alternative Service

Establishing rural telephone services in this manner can be costly and slow – a customer may wait up to two years for a telephone line. Consequently, an interesting informal telephone system has emerged to meet the rapidly growing demand. This "parallel" system is offered by enterprising river dwellers who service remote mining and prospecting fields that are not operated by large corporations. Miners in these isolated settlements need the same international commodity price information on minerals found in the area as the large corporations, and are willing to spend a considerable portion of their meager resources to get it. They also want to keep in touch with their families who live far to the south.

To provide this telephone service, a local entrepreneur registers an old riverboat with the national Port Authority in Manaus, installs a UHF radio, and anchors his floating telephone offices in one of the numerous waterways of the Amazon near a mining community that also has a UHF radio. A radio link can then be established via the riverboat between the community and Manaus, where a Mobile Marine System coastal station attends to ocean vessel telephone traffic and relays messages. Remote villages situated near the river are also welcome to use this informal telephone service. The total cost of such a system is about US$3,500 per boat.

This enterprising operation has proved so popular that the air waves have become clogged with miners' and villagers' conversations and have caused overcrowding on the Mobile Marine System that has traditionally served only ships.

Conclusion

It is too early to know what the long-term effect of Brasilsat will be on the overall expansion of rural telephony. Because the high cost of establishing ground facilities is likely to limit the expansion of satellite-assisted telephone service, inexpensive telephone services such as the riverboat system should be examined as an alternative to meeting this growing need for expanded telephone service for rural Brazilians. ■

Greta Nettleton is a consultant in international telecommunications. She lived in Brazil for a year to research its telecommunications activities.

Cornell's Communication Workshop

Cornell's Department of Communication will offer its eighth annual Communication Planning and Strategy (CPS) program from June 5 to July 1, 1988. CPS is designed for managers, project directors, decision-makers, and other key officials in government and private sector agencies whose operations depend heavily on communication for success.

Eight partial scholarships are available to African applicants through the Cornell University African Development Program. For information contact: Dr. Royal Colle, CPS-88, Department of Communication, Cornell University, Ithaca, New York, U.S.A. 14850.

(**Hubley** *continued from page 12*)

over many teaching sessions a day, and the slidetape presentations give the facts and conserve the field worker's energy for stimulating follow-up discussion.

Video, a much cheaper medium than film, is particularly valuable for producing locally relevant programs. The medium was ideally suited for showing the different stages of latrine construction. We used the professional video production and editing facilities in the Ministry of Education to produce a 20-minute introductory program "Mathabo Builds a Latrine" in which our staff acted out the process of counseling a client, Mathabo, on the best way of building a latrine and then showing the different production stages. We have started using a simple video camera to produce less sophisticated programs and even these attract a good deal of attention, and are good starting points for lively discussions.

Print media developed to date include information leaflets that reinforce the one-to-one advice sessions and posters and wall charts. Now that health workers and teachers have begun to take an interest in sanitation and hygiene, we are starting to develop a wider range of print materials such as flip-charts that can be used in their health education activities within the community.

In developing learning resources, our aim has been to try to use as many local resources as possible. While assistance was initially provided by Britain through a health education consultant, our own staff was fully involved in the planning, script-writing, and acting. Two staff members received health education specialist training in Britain and have returned to help produce radio programs and to develop school curricula and learning materials.

Conclusion

Although the urban sanitation program in Lesotho is still in its early stages, the VIP latrine is already well established in Lesotho's cities, and over two thousand are in place. Much of the success of our work has been due to the emphasis we place on health education and communication support which has enabled a small team to make a significant impact. The lessons learned in the early work have now been put into practice in a recently established Rural Sanitation Project. Furthermore, an integrated national program for sanitation improvements is now being developed with health education and communication support as an essential component. ■

Dr. John Hubley is Senior Lecturer in Health Education at Leeds Polytechnic, Calverley Street, Leeds LS1 3HE, United Kingdom; Thabo Khaketla is Urban Sanitation Coordinator and Barry M. Jackson is Urban Sanitation Adviser at the Urban Sanitation Improvement Team of the Ministry of Interior, Private Bag A41, Maseru, Lesotho.

Characteristics of Effective Health Education

- **Promotes actions which are realistic and feasible within the constraints faced by community.**
- **Builds on ideas, concepts and practices that people already have.**
- **Repeats and reinforces information over time using different methods**
- **Uses existing channels of communication such as songs, drama and story-telling, and is adaptable.**
- **Entertains and attracts the attention of the community.**
- **Uses clear, simple language with local expressions and emphasizes short-term benefits of action.**
- **Provides opportunities for dialogue and discussion to allow learner participation and feedback on understanding and implementation.**
- **Uses demonstrations to show the benefits of adopting practices.**

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(**Jenkins** *continued from page 8*)

The one-way nature of these delivery methods only means that those who develop media for delivery by means of them must do so with care. More important, when these delivery methods are used in distance learning, other means must be made available to make possible feedback and discussion from and among the students.

Besides failing to realize the full potential of broadcast technologies, in general, these programs have not taken advantage of interactive technologies that facilitate communication between teacher and student and among students themselves. These are not necessarily new, costly technologies such as direct broadcast satellites or fiber optic networks, but rather ones like the telephone that are becoming more readily available even in nonindustrialized countries.

Once a good telephone system is in place, it takes a relatively small investment to make possible even more responsive and convenient two-way communication with the aid of computers. As the author of the last paper in the volume aptly suggests in his concluding paragraph, even in 1984, the barriers to using computers in distance education were not mainly technical or even economic; today they have become less so. "People are predicting that in a few years the computer will become as indispensable as a tool for business communication as is the telephone today. That will occur when the system becomes as easy to use as the telephone and the costs in relation to the benefits are reasonable. Whether or not this tool will play a significant role in education is not easy to predict. It has the potential to do so, but so do other technologies, and yet the vast bulk of instruction the world around is still provided through books and teachers talking while students listen."

Unaddressed in these discussions was the potential for telephone-based audio conferencing for distance education – a technology that is increasingly frequently found both in the U.S. and abroad.

The paper by Ian Morrison, director of a Canadian association for adult education, warrants careful reading. He cautions his colleagues in higher education not to be too uncritical of distance education. I would extend his caution by adding that we not be too uncritical of higher education in general. Of course we need to be more critical of the means and media by which higher education are delivered at a distance, but we also need to scrutinize the content of what is delivered. The *content* of distance education is all but ignored in this volume. Granted the theme was to focus more on the organization and delivery of distance education, but given the concern repeatedly expressed over the problem of motivating the adult student, it would seem that the content of distance education, and the relevance of this content to adult students, should have been of greater concern to the authors. Indeed, some of the most successful uses of distance learning for teaching adults have shown a preeminent concern for the content of education and only a secondary concern for the methods of delivery. ■

Available for US$21.50 plus postage from Longwood Publishing Group, Inc., Wolfeboro, New Hampshire 03894, U.S.A.

Reviewed by Davis Jenkins, Director of Research, Carnegie Foundation for the Advancement of Teaching, Adult Learning Project, Academy for Educational Development, Cambridge, Massachusetts, U.S.A.

Congo Radio Project Receives Rural Communication Prize

The 1987 IPDC-Unesco Rural Communication Prize was awarded to the Rural Radio Project of the People's Republic of the Congo. For the past ten years, radio programs have been broadcast in indigenous languages to help rural people improve their literacy skills, learn management and marketing techniques, and to train trainers. These programs have led to considerable progress in the establishment of self-sustaining development activities in agriculture, education, health, and social organization.

The Rural Radio Project was implemented by the Congolese Government with assistance from the Friedrich Naumann Foundation of the Federal Republic of Germany and the Food and Agriculture Organization of the United Nations.

(**Verhagen** *continued from page 5*)

receiving us; apparently a transponder was not available for us at that time. But then, just as the San Francisco host was finishing his introduction to our site, we gained access to our satellite transponder. The program switched over to us at that instant and we saw ourselves on the large screen, accompanied by cheers and applause from everyone in the State House audience! There were standing ovations at all the sites as the images of the six leaders being honored appeared on the screens simultaneously.

As we dismantled the system the following day, I found it hard to believe that our work was finally over. What a tremendous challenge it had been, bringing together such widely separated geographical locations representing such diverse cultures. Thanks to modern technology and cooperation at the personal and national levels, the challenge was met. ■

Paul M. Verhagen is an audio engineer at WCET, the Public Broadcasting Service affiliate in Cincinnati, Ohio, USA. In 1985 he worked for three months as a short-term missionary in Nairobi, Kenya.

Briefly Noted

This column usually is reserved for short reviews of publications that the Clearinghouse feels our readers would like to know about. Recently, we have received so many interesting publications that we have prepared a list to share as many of them as possible with you. We hope you find some useful items among them to help you in your work.

A Manual For Trainers: Training in Basic Television Production and Technical Operations, Government of India. Development and Educational Communication Unit, Government of India, Ahmedabad 380 053, India

Annotated Bibliography and Resource Guide for Health Development Workers, MAP International, US$4, Learning Resource Center, MAP International, Box 50, Brunswick, Georgia, 31520, USA.

Appropriate Media for Amateur Trainers, Training Tips No. 606, UNDP Asia and Pacific Programme for Development Training and Communication Planning. For this and other DTCP publications contact: Publications Editor UNDP/DTCP, P.O. Box 2-147, Bangkok 10200, Thailand

Course Development: A Manual for Editors of Distance- Teaching Materials, Janet Jenkins. International Extension College, Commonwealth Secretariat, £10 (£7 LDC), International Extension College, Office D, Dales Brewery, Gwydir Street, Cambridge CB1 2LJ, United Kingdom, Telephone: 0223- 353321

ULCRA Newsletter, (Latin American and Caribbean Broadcasting Union newsletter). Published monthly by ULCRA, P.O. Box 213-2120, San Francisco de Guadelupe, Costa Rica.

International Directory of Development Journalists. Published by Development Forum/DESI, United Nations, DC1-559, New York, New York 10018, USA, Telephone:(212)754-1544

Portapak Production Techniques, Wayne Levy. Asian Mass Communication Research and Information Centre, 39 Newton Road, Singapore 1130, Republic of Singapore

Reporting Africa: A Manual for Reporters in Africa, Don Rowlands and Hugh Lewin. Thomson and Friedrich Naumann Foundations, £5, Friedrich Naumann Foundation, P.O. Box 1636, Harare, Zimbabwe

URTNA Family Health Broadcast Programme Catalogue (No.1, 8/87), Union Des Radiodiffusions Et Televisions Nationales D'Afriques. Published by URTNA/PEC, P.O. Box 50518, Nairobi, Kenya, Telex: 22675 URTNA

Vacciner Au Quotidien, République de Djibouti Ministère de la Santé. Publique et des Affaires Sociales, Agence de Coopération Culturelle et Technique, Agence de Cooperation Culturelle et Tech, 13, quai André Citroën, 75015 Paris, France, Telephone: 575-62-41

14th World Conference on Distance Education

The 50th International Council for Distance Education (ICDE) World Conference will be held in Oslo, Norway, August 9 - 16, 1988. The ICDE is an association of educators and educational organizations who support the aims and methods of distance education throughout the world by promoting and funding research and scholarly publications, facilitating communications and information exchange, and organizing conferences and workshops.

The Conference will provide a platform for such themes as the economics of distance education, communications technology, continuing education, women in distance education, and national development.

The final date for registration is April 1, 1988. For registration forms write to: ICDE Conference Office, P.O. Box 2100 Grünerlookka, N-0505 Olso 5, Norway. Telex: 72400 FOTEX N, attn. NADE OSLO.

Call for Manuscripts

CHASQUI is a Spanish-language quarterly published by the International Center of Communication Studies for Latin America (CIESPAL) in Quito, Ecuador. Each issue is devoted to a particular subject ranging from alternative and popular communication to technological and pedagogical innovations to communication and development.

CHASQUI invites submissions from all countries. To the extent possible, the content should be related to contemporary Latin American communication affairs. Manuscripts should be submitted in duplicate. *CHASQUI* will also consider previously published articles that have been translated into Spanish. Send your submissions to Dr. Howard Frederick, School of Telecommunications, Ohio University, 9 South College Street, Athens, Ohio 54701. Phone: 1-614-593-4867. Email: CompuServe 72746,3111 or PeaceNet hfrederick.

Information Helps Urban Lesotho Tackle Sanitation Problems

by John Hubley, Barry Jackson, and Thabo Khaketla

Lesotho is a small, land-locked mountainous country in southern Africa with a population of 1.6 million. The health profile of the population is dominated by gastro-intestinal and parasitic infections including endemic diarrhea and typhoid. Tuberculosis, influenza, measles, and malnutrition, are all common.

The World Health Organization has claimed that 80 percent of the sickness of the world is related to water and sanitation: this global picture also applies to Lesotho.

There has been an active water supply program in Lesotho communities dating from the early 1970s. Evaluations of health impact on communities showed that improving water supplies was not enough and emphasized the importance of linking water supply programs with the introduction of sanitation and basic hygiene education.

There is an urban population of 168,000 distributed between the capital, Maseru, and thirteen smaller towns. Like many developing countries, Lesotho has experienced a growth in the urban population. With families forced to live in confined spaces, sanitation has become even more important. The quality of sanitation in schools was poor and crowded public places such as bus stations and markets had rudimentary facilities. A survey showed that only 22 percent of the urban population had adequate sanitation. Sixteen percent have no sanitation at all and use increasingly contaminated spaces around their homes.

The Urban Sanitation Improvement Team (USIT) was established to meet this important need for sanitation. USIT only had a small team of engineers and community staff based at Maseru to tackle this massive problem. A way had to be found to create maximum impact using a small group of people.

One of the first priorities was to develop appropriate latrine designs that were effective, affordable, and culturally acceptable. Neither bucket latrines nor ordinary pit latrines are effective for safe disposal of disease producing organisms. High status is attached to the water flush latrines but their cost, heavy water use, and high level of maintenance made them inappropriate. Instead, the Ventilated Improved Pit Latrine (VIP) was adapted from Zimbabwe and modified for the Lesotho culture by adding seats and introducing a door.

Building Latrines was Not Enough

Our monitoring and evaluations showed that the program would have to extend well beyond promoting construction of latrines to include various health education components such as encouraging regular use of latrine facilities and promoting other hygiene practices.

Children were not always using the latrines – either because they were afraid to, or the latrines were kept locked. Our latrine program would have little impact on diarrhea if it did not ensure that the feces of young children were safely disposed of. A particular problem was the maintenance of latrines in public and institutional settings such as in schools.

Preliminary data on housing projects showed that even in situations when all homes had VIP latrines there was still diarrhea and the clean water supply was often contaminated by the time it was drawn from the water storage containers in the home. The importance of a range of hygiene measures including hand washing, food preparation, and water storage became clear. Additional health measures such as breastfeeding, oral rehydration therapy, and immunization were needed to ensure full health benefits from improved sanitation even though these were the responsibility of other government ministries.

> *". . . the World Health Organization has claimed that 80 percent of the sickness of the world is related to water and sanitation: this. . . also applies to Lesotho."*

A Health Education Strategy

An extensive health education and communication component was needed to complement the technical activities. We had to find ways to maximize the impact of our small team by mobilizing agencies and field workers who were already working with communities and could help us promote sanitation and hygiene. The strategy adopted included:

- developing a latrine design, building materials, emptying technology, etc. that were affordable and acceptable;
- involving numerous groups to support our work and carry out health education with latrine builders, teachers, etc.
- using our field staff to survey communities and promote a network of teachers, health workers, and demonstration latrines ;
- using radio to explain the VIP latrine and to identify builders who were trained to construct the latrines;
- involving agencies in Lesotho in the production of leaflets, posters, slidetape programs, and video to support these activities.

Another strategy to increase the visibility of the latrines was to work directly with individual families and establish a series of highly visible demonstration latrines. A simple diffusion process was set into motion when families would hear of the VIP latrine over the radio or from neighbors and could either contact our office for information or go directly to a local builder.

Involving the Health Workers

Another priority task has been to incorporate the promotion of sanitation and hygiene into the emerging urban primary health care structure, composed of nurses, health inspectors, health assistants, and village health workers.

While a great deal of our learning materials for the general public are appropriate for health workers, we have also prepared a special training program. This consists of three slidetape productions which describe the links between feces and disease; the different modes of transmission through water, fingers, flies, and food; the use and maintenance of the VIP latrine; and child care and hygiene measures required for the prevention of childhood diarrhea. These slidetape sets are organized for use in three separate sessions and are accompanied by a series of introductory questions and activities to promote active discussion and dialogue.

Communication Support Activities

Initially, our field workers were spending valuable time meeting with local officials, teachers, health workers, and community groups, so the development of an extensive range of learning resources was an essential part of the health education strategy to supplement our limited numbers. A range of audiovisual materials was needed to explain the links between water, sanitation, and disease and the how our team could work with them.

In selecting learning resources we chose those that were affordable, simple, flexible, capable of arousing interest, and generating discussion. All materials were produced in the national language, Sesotho, as well as in English. Our staff produced a number of spot announcements and drama programs for radio – a useful way of spreading simple information to the general public. Although video and slidetape programs require specialized production and viewing equipment, the expense has been justified through extensive use.

Slidetape programs are easily updated and modified to suit local audiences. However, the integrity of the message remains constant

(Continued on page 10)

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